The Builder.

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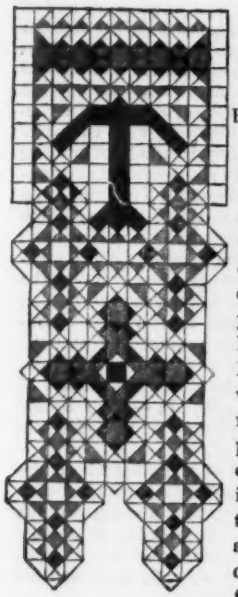


*Technical Education in France.**

THE Imperial School of Arts and Trades was founded to train educated workmen and overseers in the industrial arts. It owes its origin to the following circumstances. In the year 11 of the Republic, Napoleon, then First Consul, paid a visit to the Government College at Compiègne, and asked some of the pupils what they intended to do when they left college. The answers he received he considered very unsatisfactory. Said the subtle Corsican, "The Government pays large sums to educate these young men, and when their studies are ended none of them, save those who join the army, are of any use to their country. Nearly all of them remain at home, a burden to their families, which they ought to aid. This must be put an end to. I have visited the great manufacturing establishments in the North and the larger workshops of Paris; I everywhere found foremen clever in the manual labour of their trades, but scarcely one among them able to draw the outlines or make the most simple calculations of a machine, or to convey his ideas by a sketch or a written description. This is a great defect, and I will provide the remedy for it. There must be no more Latin here, that will be learned elsewhere, but the study of trades, with so much theory as is necessary for their progress. By this course we shall obtain well-taught foremen for our manufactories."

In this speech the great Napoleon gave the *raison d'être* for these well-organised institutions. We may observe that some of his remarks as to the deficiencies in technical instruction as it existed in France in his time, apply with considerable force to certain shortcomings of our own at the present day.

After acquiring an elementary education elsewhere, the pupils passed to the School of Arts and Trades, where, according to the occupations they intended to pursue, they were distributed among the different workshops, as,—1. Smiths, filers, fitters, turners in metal; 2. Founders; 3. Carpenters, joiners for furniture, building, and machines; 4. Turners in wood; 5. Wheelwrights. In these shops the pupils worked eight hours a day. There were half a dozen classes, according to the proficiency and aptitude of the pupils. Out of the eight hours only two were given to study and to theory, including geometry, descriptive geometry applied to the arts, and drawing and shading of plans and machines. Pupils were admitted without regard to age, and the number was fixed at 500.

Many improvements were introduced in the course of the subsequent years; but the chronicle of these changes would be too long to be inserted in this place. It will be preferable to give a brief sketch of the organisation of the school at the present time.

As we have seen, the studies are both theoretical and practical. The pupils are admitted, after an examination, only once a year, on the 1st of October. The instruction extends over three years and a half, and there are no vacations, not even a half-holiday. Sunday is the sole day of rest. By this system no time is lost, and the pupil learns to grow accustomed to the six days of unceasing labour, which are his lot in life. Twelve hours and a half of work have to be got through daily. Five hours and a half are given to theoretical studies, and seven hours to practical work.

The theoretical study is divided into two parts,—four hours and a quarter in the morning, and one hour and a quarter in the evening. The morning, as being the time when the head is clear and the ideas fresh, is chosen for mathematics and questions, also drawing. The workshop duties are divided into two equal portions, —from ten till half-past two, and from half-past three till seven. The interval is devoted to dinner, and playtime after it. This interruption of manual toil rests the body, as the work itself rests the mind for the evening studies. The pupils rise at a quarter-past five and make their own beds.

The school is classified in three divisions, or years of study, each having its own professor of mechanics, or mathematics, and of drawing. There is also a professor of grammar, and during the first two years a professor of writing. The chaplain gives every week a lecture in religious and moral instruction.

During the first year the professor rapidly passes through the programme of admission, his object being to systematise the knowledge acquired elsewhere, before proceeding with his own teaching. In the subsequent two years he teaches them,—arithmetic, algebra as far as and inclusive of quadratic equations, elementary geometry, comprising curves of the second degree demonstrated geometrically, plane trigonometry, the elements of descriptive geometry, and of the construction of geometrical machines. In the third year a professor teaches industrial mechanics, including hydraulic machines and steam-engines; the principal elements of physics; lastly, the rudiments of chemistry, its nomenclature, and its applications to materials. The pupils are interrogated whilst at their studies by the professors and by the foremen of the workshop.

A very simple method of teaching drawing is practised. During the first year the pupils acquire a free use of the hand by making designs with a drawing-pen of curves, &c., which at a later period they will require when drawing machines. Most of these designs are taken from architecture, of which the scholars are taught the rudiments. For this portion only the drawings are copied from models. The first year's drawing studies are completed by making drawings of joints in carpentry and joinery, exercises tinted with Indian ink, and two drawings of plans.

During the second year, first the elements of machine drawing; next follow, in the hours of study, working drawings of descriptive geometry, which require the most rigorous accuracy. On attaining this point, the pupils, having acquired neatness, clearness, accuracy, and precision, should be able to draw well. They immediately apply their skill to the geometrical drawings of machines, gearing, &c. In this second year they make sketches in the workshops of tools and various machines to scale, with dimensions given. In the third year they make drawings of machines, and illustrations of the lectures on mechanics. They also calculate the principal parts of the machines, and conclude with making drawings of machinery in black and white.

We have thus given in detail this simple and natural gradation of studies in drawing, it having been found to afford the most successful results. The complete three years' course comprises upwards of a hundred designs or working drawings. The projects and details of the machines to be made in the workshops are executed by the professors in the office of the engineer of the works. It now remains to describe the practical instruction. The pupils are classified in this way. One-third of them are distributed in the preparatory workshops, that is from twenty-five to thirty-five in each of the three: the pattern-shop, the foundry, and the smithy. The remaining two-thirds (about 200) are sent to work in the fitting-shop.

In the pattern-shop the pupils commence with making simple patterns with boards; next they learn to execute all the different joints used by carpenters and joiners; next come patterns for founders, proceeding from the simplest to the most difficult and most complicated; straight or bevelled gearing, with and without mortising, cylinders and framework for steam-engines, and so on. By way of practice in cutting and manipulation of wood, the pupils also make articles of furniture, pulpits, and woodwork for churches, and other things more or less ornamented.

In the smithy the students commence with welding scraps of old iron into masses, and making tongs and other tools used in forging. They next forge small articles for exercise in filing and fitting, and afterwards make parts of machines. In the third year they are taught the use of the steam-hammer.

In the foundry they commence with plain castings of medallions, balustrades, and palisades, as well as the simpler parts of machines. They next make busts and statuettes on a small scale, before proceeding to execute in large dimensions. By degrees they come to the framework of machines, and the casting of large wheels, either with cogs or with mortise holes, to receive wooden ones. Lastly, they proceed to the casting of small cylinders.

By way of showing how successfully these things are taught in the Imperial School of Arts and Trades, we may mention, that in 1861 this school turned out a fine casting in bronze, upwards of 9 ft. high—a statue of the Duke de la Rochefoucauld, which was set up in the public square of Liancourt. As a rule, however, these castings are in iron. All the processes of the workshop are performed by the pupils themselves, as making the moulds, charging the furnace, casting, paring, and trimming.

In the fitting-shop the pupils begin with simple pieces of regular forms, requiring considerable attention to symmetry and precision, and for that reason very instructive. For example, they first of all make two small iron straight edges, perfectly true in every way; then two squares accurate in every respect; next they make a regular quadrangular prism, and from it an octagonal prism. Subsequently they execute various kinds of compasses, hand and claw-vices, keys for screws, ratchets, bow-lathes, and bench-vices, and, finally, machine tools, steam-engines, and parts of machines, according to the orders in hand.

In carrying out these multifarious practical operations, their work is regulated by certain general principles. In accordance with these principles the pupils, as a rule, make only one piece of the same kind, in order to learn how to execute the greatest possible number. All their work is done, as far as is practicable, by hand, and with the simplest tools.

The intention of this training is to teach the pupil to make all kinds of things, so that he may be able to turn his hand to any branch of his trade where he may find an opening, and to fit him for entering any workshop, large or small. It is stated by the Government reporter, that after a year's work, in any spe-

* See p. 757, *ante*.

cialty, a clever pupil will acquire all the rapidity of execution characteristic of good workmen.

Until the pupils can work well with the hand, they are never allowed to use the machine tools, or the mortising, planing, or filing machines; but the less skilful always have the advantage of seeing these machines in use; and having been compelled to make drawings of them, they must be well acquainted with their principles. Each pupil has a vice to himself, and at each bench the more advanced pupils teach the juniors. There are also in each shop one or two workmen as examples for the lads.

The pupils are classed, according to merit, at the close of the year, at which time the most deserving are rewarded with prizes. These prizes consist of silver medals bearing the words, "School of Arts and Trades—Reward," for the pupils who are about to leave the school, and who constitute the first division. In the second and third divisions, the rewards consist of books on science or the industrial arts. Sometimes a successful pupil is fortunate enough to obtain the award of a sum of money to help his start in life, but this money is never paid till the following year, and then only on condition of the claimant's producing certificates that he has been working at his trade for the past twelve months.

Among the prizes may be mentioned those of M. Xavier Jourdain, founded in 1863, as a testimonial of gratitude for the education he received in the school, to which he attributes most of his success in life. The first prize is a gold medal worth 300 francs (12*l.*), and a sum of money, 1,000 francs (40*l.*); the second prize is a similar medal and 500 francs; the third prize is a silver medal and 400 francs.

The average annual number of pupils during the last four years has been 312; but at least six times that number presented themselves as candidates.

The question will naturally arise, do the pupils on leaving the schools readily find employment, and at remunerative wages? A return shows that from the very entrance of these pupils upon active life they have obtained employment in factories, workshops, and in railway and other establishments. Out of 465 pupils who left the establishment during two years, two only were returned as being out of employment. All these young men seem to have obtained fair wages. Every department of France has the right of sending three exhibitioners;—one without any charge, the second to pay one-fourth of the charges, and the third one-half.

How such an establishment would work in this country it is no part of our plan to dilate upon. Our intention in this article is to give facts, which may be accepted as trustworthy, being founded upon official documents. We have no theories to advance, we wish simply to give an account of certain things as they exist.

Let us now turn our attention to some other institutions for technical instruction in France. Among the most important of the minor establishments may be named the Polytechnic and Philotechnic Associations. These two associations have in Paris no less than 150 professors, who perform their functions gratuitously. The instruction consists of courses of arithmetic (first and second years), geometry (first and second years), descriptive geometry, physics, chemistry, machines, drawing of the figure and of ornament, geometrical drawing, book-keeping, geography, natural history, elementary astronomy, grammar, hygienics, singing. The Philotechnic Association has also established courses of English and German, which are not given by the sister establishment.

This association has been rightly called the Working Men's College, as the Conservatory of Arts and Trades has earned the title of the Manufacturers' College. Admission to all the courses is not only gratuitous, but the pupils are also received without any conditions as to their previous education.

Various objections have been raised against courses of teaching for adults, which the director answers. Among other objections it has been urged that the artisan, after a hard day's work, must be, as a general rule, little disposed for intellectual effort. Again, the workman being obliged sometimes to work over-hours in the evening, cannot be regular in his attendance. The first objection, says the director, is unfounded. Intellectual effort after bodily labour is a recreation rather than a fatigue. Energetic workmen who know the value of instruction find a pleasure in attending classes, if not every day, at least once or twice a week. To the second objection, which the head of the establishment admits to be more serious, he remarks that in certain establishments over-hours are rare, and that, when the men miss lessons, they may easily learn what has taken place in their absence from the notes of their comrades.

We now come to the important establishment founded at La Ciotat by the Company of the Messageries Impériales, for supplying its workmen with the means of acquiring or extending their technical education. There is an infant school and a primary boys' school at La Ciotat; but these do not fall into our plan.

In 1863 evening classes for instruction were opened for workmen and apprentices. Three times a week there is a drawing class from eight till ten in the evening; three lessons per week in the English language are given; and there are courses of orthography, grammar, &c.

At the Graffenstaden Factory, in the Department of the Lower Rhine, there is a school for technical instruction. The term of apprenticeship in this factory ranges from four to six years, during which the lads are bound to attend the school. Experience having shown that the school to be successful must not be altogether gratuitous, each pupil has to pay a tenth of his earnings into the school fund. These boys are taught caligraphy, French and German grammar, dictations and compositions in French and German, free-hand and geometrical drawing, drawing of machines, arithmetic, elementary geometry, physics, and mechanics.

The classes are held every morning from six till eight o'clock (including Sundays), and every evening from five till seven, except Wednesdays and Sundays. Firm discipline is maintained. The schoolmaster presents to the director of the factory a daily report respecting absent pupils, or other facts. The punishments to which the pupils are liable, according to the character of their faults, are a reprimand from the director, a pecuniary fine, or expulsion from the factory. There are monthly and yearly examinations, on which occasions prizes consisting of useful books are awarded. The efforts of these lads at self-improvement are aided by an excellent library provided by the factory, containing the best scientific and technological works which have appeared in the French, German, and English languages.

The Imperial manufactory of arms at Tulle provides classes for the instruction of its workmen. Attendance at these classes is compulsory on all the workmen proposed for promotion, either in the manufactories of arms, or as head armourers in the different army corps. They are optional for all the other workmen; but none are placed on the lists for promotion who have not attended them to good purpose.

In founding these classes the objects in view were,—1. To give the heads of workshops and factories the instruction necessary to enable them without the aid of others to keep the daily accounts of the workmen under their orders. 2. To give the men destined to become controllers of arms or chief armourers to corps of troops, a sufficient knowledge of elementary geometry and linear drawing to enable them, if called upon, to take the direction of workshops for the manufacture or repairs of arms, or to superintend the working of machines in factories, and to keep the same in repair. These classes are held three times a week, and are taught by three Government officials, one for arithmetic and elementary geometry, another for drawing, and a third for the manufacture of arms. All these courses are attended by workmen employed by the Government.

The Upper Commercial School is another representative institution. It was founded in the year 1820 as a scientific institution of a kind then unknown. Its curriculum requires three years of study by the pupils, and no pupil passes from one class to the next without undergoing an examination.

Though in some manner elementary, the first class admits only such pupils as have received a good primary education, and are pretty well versed in French grammar, arithmetic, and geography. It is devoted to improving their handwriting; to the study of arithmetic, geography, and history; to an elementary course on the usages of trade and the rudiments of accounts; to natural philosophy and chemistry; and to the knowledge of raw materials, of which the school possesses samples. In this class the pupils begin the study of languages: the foreigners learn French; and the French pupils make a more profound study of the rules of their native idiom. The second class does not receive pupils under sixteen: it carries on some of the preceding studies, adding book-keeping, the theory of accounts in all parts, the application of arithmetic to all the operations of trade and banking, a course of correspondence, essays intended to accustom pupils to express their thoughts rapidly with precision and clearness, linear drawing, geometry, the elements of algebra, commercial geography, and the study of the code of the commerce of France.

The third year is devoted to the higher branches of learning, and to practical exercises. It includes the study of the exchanges, and of arbitration, as to transactions with foreign Governments; application of accounts to commerce, manufactures, and agriculture; analytical chemistry and chemical manipulations applied to the study of merchandise, and to the discovery of adulterations; technology of the principal manufactures; the requirements of trading ports, railways, and docks; mercantile and marine law, and political economy. The pupils are divided into groups, or commercial firms, which are from time to time renewed, buy and sell goods, keep banks, charter vessels, assure, commission, correspond, and perform, under the guidance of an able and experienced professor, all the most difficult and most varied operations of commerce. The pupils rise at half-past five all the year round, and at six commence the business of the day. The hours of every day are thus employed:—Five hours' lessons, six hours' study, and four hours' recreation.

We have now noticed at some length all the representative establishments for technical education which exist in France. Throughout the length and breadth of that country there are scores of similar establishments,—trade schools, farming schools, drawing schools, and schools of architecture and engineering.

By way of conclusion, we may give a *précis* of the views enunciated by General Morin, the Government reporter, on technical education with respect to the very important question of the education of apprentices.

With regard to apprenticeship, and its connexion with education, three principal solutions have been put forth. The first is, that the workshop alone can attain the object of all apprenticeship, properly so called, namely, training the artisan, and giving him the requisite manual dexterity. To combine with a real apprenticeship to the future trade the degree of instruction that all workmen ought to possess, two principal means have been successfully employed. One consists in placing the school in the workshop or factory, and in compelling, either by law or internal regulations, the daily attendance of the apprentices for a certain number of hours. Of this kind are the important factory-schools at Mulhouse, Graffenstaden, Wesserling, Le Creusot, La Ciotat, &c. The second solution is that which has been organised by certain municipalities, and private firms and societies of patronage, which take the apprentice under their protection, and watch over his interests until he has served his time. The third manner of preparing youths for the practice of the different trades, consists in establishing a workshop in the school itself, and dividing the pupil's time between study and manual labour.

Such, in a condensed form, are some of the opinions and reports of the authorities charged by the French Government with the duty of examining the real condition of technical education in France.

ARCHITECTS AND ENGINEERS.

The generalising tendencies of the present day, the result mainly of the broader analysis of modern science, concur to draw together and assimilate, in many points, pursuits and professions formerly separated by an easily-recognised line of demarkation. As we draw nearer in our researches to first principles in science and art, we come almost insensibly to find things which we had been accustomed to regard as essentially diverse in their nature, resting, in fact, very much upon a common basis; we discover that knowledge and information which have been supposed to bear specially upon one particular occupation, come in usefully also, or even indispensably, in the practice of other pursuits more or less analogous. The primary effect of such discovery is, as we have hinted, to unsettle and confuse the nominal boundaries of professions, a process which is still more accelerated by the rapidity of modern life and the comparatively short time in which everything

nowadays is expected and demanded to be done. "That is best which lieth nearest" is the principle adopted by the practical man as well as the artist. The client goes to whomever he thinks will supply him most readily and quickly with what he wants. But the secondary effect of this state of things must necessarily be in the end to narrow the circle of individual practice in any art or profession, to promote the principle of the division of labour, and to break up large and ever widening spheres of labour into smaller sub-divisions, so that each practitioner may be able to grasp fully what he professes to do, and to render efficient aid and co-operation towards the grand result to be attained.

It is under such general influences as above indicated, that the two professions named at the head of this article have, at present, got themselves a good deal confounded together in the public mind; which confusion has been, if not initiated, at least encouraged and stimulated by sundry members of the engineering profession, individually or through their recognised journalistic representatives, on the principle, assumed if not stated, that "an architect and an engineer are very much alike,—especially an engineer." The distinction between the two professions was formerly sufficiently recognised by every one, and might in broad terms be expressed thus: that the engineer was concerned in providing for transit from one place to another, the architect in erecting buildings *in situ* at the various termini of locomotion. The older engineers made their fame by their canals, their bridges, their roads over impossible places; the architects by their mansions, their town-halls, and public buildings generally. But the advent of that great democratising agent, steam, for a time very much modified all this. In the first place, the discovery of so new and valuable an agent in locomotion naturally drew everybody's attention, much more than formerly, to the constructions required in connexion with locomotion, rather than to those needed for habitation or display. Railways became an end rather than a means, so that in some cases the natural order of things was reversed; and instead of the railway being used as a means of communication between two towns, unimportant towns were made the excuse for a railway, projected and surveyed, if not completed. In such a state of things the engineering profession of course got a long pull, and a strong pull, and a pull altogether, alike upon the purse and the confidence of the public; giving, let it be said, good and strenuous labour in return. Then there were, in connexion with railways, such things as terminal and roadside stations to be built; things bearing the semblance of being strictly architectural work, but which, nevertheless, fell largely into the hands of the engineers, as many direful structures up and down the country can and do abundantly testify. Then also, since the time saved in travelling has led inevitably to our much faster rate of living generally, and the demand for the execution of edifices of all kinds on much shorter notice than was once deemed necessary, it has been discovered in some important instances that the engineer, from his constant grappling with tough constructional problems under adverse circumstances, is a readier man in an emergency than the architect; and so there has passed into his hands the superintendence of sundry erections, from time to time, which, if there be anything at all in the architectural profession, certainly ought not to have been built without, at least, the co-operation of an architectural designer. However, the mischief is done now; and that which has in some instances come to pass in practice, has been justified in theory, in certain quarters, with a persistence and an ability which have not been without their effect on the public, who will believe anything if they only hear it often enough, and many of whom are already quite prepared to accept the engineers' own account of themselves, as the persons best qualified to superintend the contriving of all such structures as might, could, or should be erected upon the surface of the earth. This view of the matter is partial and incorrect in itself, discouraging to the student of architecture, and exceedingly pernicious to the student of engineering.

Of course, as we all know, every design must have a structural basis, and therefore knowledge of construction is necessary to the architect, whatever he is engaged upon. It is only when the constructive necessities of a building, or of a structure of any kind, completely override in importance its artistic necessities, or when the constructive problem is so difficult and complicated as to be itself an object of special study, and of the application of abstruse scientific and mechanical principles, directed by a judgment resulting from long practical experience, that the aid of the engineer is really necessary. There are classes of works which belong purely and absolutely to the engineer, and wherein there can scarcely be said to be any scope for architectural embellishment; there are again works, such as ordinary houses, churches, &c., where the only problems really requiring thought and intellect are those of design (including plan) and ornamentation; and there are again works belonging by custom and in their initial form to the engineer, which would yet be susceptible of much embellishment from the hand of the architect; and, conversely, works of which the main object is beauty, but which are erected under structural conditions which demand special engineering skill and science to grapple with them successfully.

And this latter class of works, of what we may term the mixed kind, is much more numerous in the present day than ever it has been hitherto, and is not perhaps likely to become less so. It might seem natural and right that the mere channels of locomotion, of access from one centre to another, should fall solely under the hand of the engineer, as works purely of necessity and for use. And in the old road and canal-making days this was of course the case. But now that the railway system has necessitated so many stopping-places on the road, apart from ordinary towns and villages, where erections of great size are required for the daily use and under the daily sight of many thousands of people (not to speak also of the multitude of roadside stations, important by their number and frequency, if not by their size), it is surely desirable that some special attention should be paid to the æsthetic beauty of such structures, in addition to their mere constructive strength and fitness. In some cases this has been done, but chiefly in the matter of small roadside stations; the large termini being still left, for the most part, under the sole care of persons whose very education tends to draw their minds completely from considerations of beauty and expressiveness in an edifice, and to develop their faculties on the practical and calculating side only. On the other hand, the demand for the production of very large buildings on very short notice, and sometimes under peculiarly difficult conditions, which has arisen under modern civilisation, tends to put the architect in a very different position with regard to the practical requirements of his profession. A Gothic cathedral was a thing elaborated slowly and deliberately, and may have been the result less of any accurate scientific theories than of practical experience attained by men who were constantly engaged on their work, thinking of little else, and who had time to deliberate and experimentalize. Now, everything is wanted to be turned out of hand by a certain date, and its constructive security must be guaranteed, or the insurance companies will have nothing to say to it. And all this seems to lead us to what we have called the secondary but inevitable result of the conditions of modern life, viz., the carrying out to a greater extent the principle of the division of labour, and restricting the practice of each profession within closer limits. In other words, we think that not so much a fusion of the professions of engineer and architect is called for, as a co-operation of the members of those professions each in his own strictly-defined sphere.

It may be said that we should rather attempt to educate our engineers better in design, our architects more thoroughly in construction, and so dispense with the inconvenience of having two professions to do, as it sometimes seems, the same thing. Our system of education would have to be very much methodised and improved before any such result could be obtained. But we believe the idea is chimerical, except with regard to peculiarly gifted and exceptional individuals. Architectural design, in a high form, rests, as we have frequently urged, upon very subtle and refined principles, not apprehended without considerable study, even by those who have a special gift that way; and the very quality of mind which predisposes a man for this class of study is that which has most antipathy to, sometimes even absolute inability for, mathematical and mechanical studies. "Ah! sir," said William Blake, on being shown some mechanical engravings, "these things we artists *hate*." On the other hand, it cannot be doubted, not only that the highest engineering talent is very often found totally unaccompanied by what we may term æsthetic perception, but that, as before remarked, the very course of an engineer's education tends to draw his mind solely to the consideration of the mechanical properties of material, without any reference to their capability for beauty of form or finish. And the very rapidity of demand in the present day intensifies the importance of this distinction. Were there more time allowed for maturing the design and carrying out the construction of a large building, there might be more chance that one man would be able to provide at once for its constructive and artistic requirements. As it is, except in cases where one of these two classes of requirements is at a minimum, it is next to impossible for one mind to attend properly to things so diverse, and calling into play such a different class of faculties. Where the constructive and the artistic problems are equally balanced, and are each important in themselves, a fully satisfactory result can scarcely be obtained but by co-operation.

We should probably not have much difficulty in recommending such an idea to the consideration, at least, of members of the architectural profession. In some instances within our knowledge the calling in of an engineer as consulting constructor has been adopted by an architect, and that voluntarily. And there are probably many cases where, in carrying out very large works especially, an architect who was solicitous for his future fame as a designer, would be really glad to be relieved from the onus and responsibility of the thousand and one practical difficulties and dangers to be provided for or guarded against, and have his mind left free to bestow all its faculties on the great end of all architecture, rendering a building a delight instead of a nuisance. We are sorry that we can feel no such confidence, or half-confidence, in the converse case. The attitude taken by the engineers towards their architectural brethren has too much savoured of an antagonistic, or, at least, a kind of "we-can-do-without-you" feeling. When Professor Kerr, some years ago, in a paper read at the Institute, and printed in full in these columns, ventured to advocate something like the same system of co-operation which we have been hinting at, he was answered in an indignant and injured tone by an engineer correspondent, who assured him that engineers "would not put themselves into architectural harness." No one ever asked them to do anything which ought to be so defined. Those who take this tone, no doubt, think that they evince their superiority by so doing; that they speak from a superior standing-point to that occupied by those half-taught people the architects. They are quite mistaken. Their arrogance is that, not of knowledge, but of ignorance. But the mischief is that, from the nature of the case, it is often impossible to convince them of this. Mathematical and mechanical knowledge is a thing that can be defined; and if an architect is deficient in this, his deficiency can easily be proved to him, though he is, of course, open to say, if he chooses, that he thinks it of no consequence to him. But if a man is insensible to the difference between beauty and ugliness, between an artistic and expressive, and an inartistic and meaningless structure, what can we say? He is insensible, and there is an end. You cannot demonstrate to him, logically, that he has erected a monstrosity upon the earth; for all that he can see, it looks all *right*, and he does not know what more you can wish for. The absurdity is, that with all this ignorance of and indifference to what constitutes the æsthetic in building, the engineers still seem to have a kind of lurking conception that something called architecture is needed to give the finishing touch to their constructions; and this they set about supplying by the light of nature; that is to say, instead of letting the real construction of their work appear, they mask it behind something which resembles something else which has been done somewhere else by somebody else at some other period, ancient or modern, and which has no conceivable relation to the matter in hand, and then complacently think they have done the architect's work in addition to their own. All that they have really done is to deprive their work of all the solid and satisfactory expression which it might have had as a piece of unadorned construction, and to make it, externally, a meaningless and often hideous sham. Pure constructive provisions, when made on a large scale, will often produce a fine general effect in spite of the engineer. We remember on one occasion being struck by

the fine bold outline of a machicolated water-tower seen in the distance from the streets of a provincial town. The machicolations were used for the practical purpose of obtaining a wider area for the tank at the top. We took an opportunity of making a closer inspection of the edifice, and scarcely know how to express the effect it produced upon us. An attempt had been made at what might be called "lunar Gothic;" and every detail in the tower, and the surrounding buildings, was so uncouth, so inconceivably hideous and barbaric, that we stood lost in wonder how any man could possibly have invented such ugliness. Yet this was the work of an engineer eminent in his profession, and who, as we incidentally learnt afterwards, prided himself particularly on the appearance of this very building.* He is dead now, and we trust his iniquities are forgiven.

The real remedy for this engineering intrusiveness of barbarism upon us lies with the public. And if the directors of railways and water companies, and such-like concerns, could be got to insist upon the introduction of artistic as well as constructive excellence in the great works which their business requires, we might be spared some very painful sights, and even gain some very fine ones, with little or no extra expense. Consider what a fine thing might be made of such a large railway station as that of Crewe, for instance, with its long perspective, if treated with architectural breadth of effect in the general arrangement, and fitness and elegance in details. We see no reason why the engineers should feel insulted at such a proposition. We believe the architects are quite willing to recognise the importance of engineering experience and knowledge, and to avail themselves of it where really desirable. They may surely ask in return that their art should be recognised, and that engineers should be willing to consult the judgment of persons who have studied the art of beauty and expression in building, which they themselves have paid no attention to. One piece of advice we give the engineers in the meantime. If they still wish to keep clear of the architects altogether, they had better be contented with naked construction, and avoid dabbling in architectural design themselves. They could do nothing which would illustrate more emphatically their need of the architects' assistance.

A FEW WORDS TO SOME WORKMEN.

We adopt, as we naturally should, the observations made by the third speaker (Mr. Godwin) at the Working Men's meeting held in Bristol during the recent Social Science Congress. At that remarkable gathering no fewer than 3,500 persons attended, of whom at least 3,000 were of the wage-paid class. The Health Department of the Association considers the various questions relating to the Public Health, discusses improvements in house construction, drainage, ventilation, the functions of government in relation to public health, and the machinery expedient for its preservation. The Council always desire that this part of their programme should be brought prominently before the meeting of workmen invariably held during their congresses; and very properly so, for it concerns no part of society more, if so much: health is the workman's stock-in-trade; without it, he is nowhere; knowledge of the laws which regulate it is of the utmost consequence to him, and should be systematically taught: every item of such knowledge that he can obtain will be of value to him. Much has been done in Bristol within the last dozen years to improve its condition. Clark's report shows what it was in 1850. A board of health and an anxious medical inspector have since been at work, and have lessened the death-rate; but they must not rest on their oars: the removal of the sewage will demand their most serious consideration; hundreds of houses are still unfit for human habitation, and smoke is still allowed to disfigure the city, to interfere with health and to prevent cleanliness, although the Act of 1866 would enable them to remedy the evil. Walpole called Bristol "the dirtiest great shop I ever saw:" and inattention to the smoke nuisance leaves it, to a certain extent, still open to a similar remark. Smoke interferes with the spirits, makes life less buoyant, and lessens happiness. Surely it should be fought with; surely it should be conquered. It is too late in the day for objectors to express any doubt as to the value of good sanitary arrangements. What has been effected by improvements in this direction in Salisbury, Ely, Croydon, and Bristol itself, as well as many other places, affords sufficient proof of their value. The great test is, the death-rate. What lessening the death-rate of a town means is not fully felt by all. Take a practical illustration of it. The population of Bristol is called 172,000, and the death-rate in 1868, if correctly given, was 23 in 1,000;—for every thousand persons living 23 died in the year; 3,956 in all. Now the death-rate in Manchester for that year was 32; and if it had been the same in Bristol, 1,548 persons alive at the end of the year would have been dead. This is a serious matter, and worth comprehending. It must be remembered, too, that for every death there are seven or eight cases of illness that do not so end. Besides the 1,548 additional deaths, there would, therefore, have been eleven or twelve thousand additional cases of illness, with their consequent pain, poverty, pauperism, degradation, and misery. To lessen the death-rate of Bristol one per annum, is to save 172 lives yearly, and some 1,200 cases of illness. Are not all concerned in striving to effect this? The consideration of the importance of sanitary improvements should surely make us less impatient of the taxation they might lead to. What is wanted, we say again, is knowledge. If the Board of Health were fully supported out of doors, they would probably soon apply themselves to enforce the improvement of some of the dwellings, for example, lying between the cathedral and the gasworks,—dwellings wherein, as at present occupied, health and virtue are scarcely possible. At the place called the Quarry, also, great changes are called for. Here habitations are planted against the sides of the excavation, so that proper ventilation is out of the question. The effects of overcrowding should be inquired into, and the value of air understood. How is it that so many children still die before they are five years old? The number comparatively is enormous and damnatory. With adults, badly-constructed houses and overcrowded rooms produce a low state of health in the whole population, and dispose it to receive readily any infection, physical or moral. The bad food they get, and the habits some of them indulge in, increase this disposition to the bad. Nor is the latter evil confined to their class. Each class has its bad habits. What might not be done if we all gave up some of our indulgences with a view to the general improvement—say, for example, that less was drunk. Some 50 millions a year are spent in intoxicating liquors, with a crowd of fatal consequences to boot. Suppose we gave up half our drinking,—not to be too good all at once,—the 25 millions sterling so saved could be made to save 25 millions more. It is not alone the working-classes that need to be taught temperance. All classes require the lesson: there should be temperance in other things besides drink. Education is a more profitable investment than beer, and has a money value. Artistic skill, the result of education, has given foreign nations a great advantage over us. If our workmen will not go to the School of Art themselves, if they are too firmly fixed to get out of their regular groove, at any rate let them send their children: the hope of the nation is in its children. A knowledge of drawing not merely brings delight but profit, and its acquirement in youth is as easy as that of writing: it gives a new sense, a new power. Connected with these subjects,—the public health and the education of the masses,—are the adornment of cities and the spread of taste for works of art and knowledge of art. One of the speakers at the same meeting, commenting on this observation, said coarsely that to talk of taste before you had filled the people's bellies was nonsense. Such a remark is worse than nonsense a vast deal. Are we to wait until all the bellies are filled before we talk to any of the value and delights of art? If so, depend on it there will be less and less power in the country to afford that material aid. The ignorance in respect of art amongst all classes is sorrowfully great. Our public bodies should attach more value to art, and spend more money on it. We want large pictures in our meeting-places open to all, teaching, elevating, purifying; we want more sympathy between masters and men, between men and men; we want universal education, and the spread of knowledge. Knowledge is not merely power, knowledge is health; and without health there can be little happiness or progress.

* In another place, we have seen a large reservoir built on the top of a hill, in a pretty country, which might have been made a striking object. It was built in the *form* of the smallest and most simple of cottages, under a single roof, the tower at one end taking the usual aspect and position of an outside chimney up the centre of the gable! The effect was, literally, to dwarf the scale of the whole landscape round.

THE LATE MR. THOMAS WATTS, OF THE BRITISH MUSEUM.

The following observations by Mr. Henry Stevens (of Vermont), long and honourably known in this country in connexion with books, will be found interesting:—

Mr. Watts used to say that his first position in the library was the very humble one of supernumerary assistant for arranging and cataloguing the accumulations of Chinese, Russian, and other books of the kind, which no officer or assistant felt disposed to take hold of.

In 1838 Mr. Panizzi, then keeper of the printed books, detecting and appreciating his uncommon abilities, nominated him as second officer on his staff, Mr. Jones being the first. One of Mr. Watts's chief recommendations to the appointing powers was his practical and working knowledge of twenty-five languages. For nearly twenty years it was part of Mr. Watts's duty to examine, classify, and place all authors as they came crowding into the library. Thus every book, from whatever part of the world it came, passed under his eye, affording a rare opportunity for a man of his linguistic powers. Many a time has he been noticed beside his loaded distributing barrow, eagerly "dipping" while his attendant stood yawning. He gave great attention to the bibliography of the literature of the north of Europe, including the Icelandic, the Swedish, and other Scandinavian languages, nor was he less mindful of the Russian and Sclavonic languages generally, especially the Hungarian. Mr. Panizzi, and afterwards Mr. Jones, with commendable zeal, purchased all the books in these languages recommended by Mr. Watts, in so much that the museum is now probably richer in books of each of these languages than any library in Europe, not excepting perhaps the best collection of each language in its own country.

Soon after 1843, when Mr. Panizzi, aided by Mr. Jones and Mr. Watts, drew up his famous report on the deficiencies of the British Museum in the literature of the several countries of the world, it was found that though every English book might in time be acquired, yet the books wanted from all parts of the world, in all languages, would soon outnumber and dwarf the English department. It was, therefore, thought desirable to give especial attention to the collection of American books, as if they were English; that is, to procure them all. A parliamentary grant of 10,000*l.* a year was asked and obtained for the purchase of books alone, the binding and all other expenses to be provided for by other funds. That sum is still the annual grant. In 1843, a few American books were purchased, but probably at that time the whole collection of American books in the library did not exceed 1,000 volumes, nor was there at that time any just idea of the vast amount of books that had even then been produced in the United States. In 1845, a young man from Vermont drifted into the Museum, introduced by Mr. Sparks. He had taken a degree from Yale, had heard Story lecture, and was a good deal interested in American literature and history. Mr. Panizzi, Mr. Jones, and Mr. Watts, soon drew from him a report on American books, comprising a list of some 10,000 volumes not in the library. Measures were at once taken for purchasing the entire list, and from that day to this the American department has been filling up so rapidly that now there are probably not less than 100,000 volumes of American books and books relating to our country in the British Museum, including especially all the more bulky and costly works, and not excluding pamphlets and the unconsidered trifles of the day. This noble work, begun by Mr. Panizzi, and steadily carried on by Mr. Jones for nearly ten years, has been pressed on by Mr. Watts during his brief administration of about three years. In 1856, the trustees sanctioned the printing of the catalogue of the American department, which when completed will go far towards a history of American literature.

Mr. Watts possessed a most remarkable memory. He could instantly point out the press and shelf of probably more than 100,000 works. He liked to meet Americans, and always prided himself on knowing something of the personal

history of every prominent one who came to see him. The writer well remembers two attempts to test this faculty. One day, without any notice, he took a friend into Mr. Watts's recess, and said abruptly, "Mr. Watts, let me introduce to you Professor Silliman, of Yale College." "Oh," said he, rising, and cordially extending his hand, "how very fortunate, Dr. Benjamin Silliman, that you should appear here of all places in the world, just fifty years since your first visit, when in your 'Travels' you wrote a most interesting account of our library. Come, let us go and see your rare little book, and at the same time I will show you the library, and afford you the opportunity of writing another account, showing our half-century's progress,"—and he walked off the professor to a remote part of the library, and laid his hand on the volume, as if it had been one for his daily reading. A similar readiness delighted and astonished the Hon. George P. Marsh with respect to his little privately printed Icelandic grammar.

Among all his pressing duties (and when 10,000*l.* a year are spent, and an average of 30,000 volumes acquired, duties are pressing) which he never neglected, he found time to do a good deal of literary work, one of his earliest productions being "A Letter to Mr. Panizzi on the History of Early English Newspapers," showing, to the regret of antiquaries, that several of the earliest and most interesting respecting the destruction of the Spanish Armada were forgeries. He contributed largely to the cyclopædias and magazines on biographical, bibliographical, and philological subjects. His "History and Description of the British Museum" in the English Cyclopædia is an exhaustive production, and his "Essay on the Hungarian Language" made him a member of the Hungarian Academy.

Mr. Watts was the first superintendent of the new Reading-room,—a living, breathing, and answer-giving index to the vast library of 1,000,000 volumes within. He had seen the library grow from 250,000; and, as he had placed most of the authors as they arrived, none knew so well as he who they were, and where they were to be found. He held this post for nearly ten years, when, on the retirement of Mr. Panizzi in 1866, Mr. Jones succeeded to the office of principal librarian and secretary to the trustees, and Mr. Watts was soon after promoted to be the keeper of printed books.

HOW BRISTOL WAS RETARDED, AND IS PROGRESSING.

During the recent congress of the Social Science Association,

Mr. Charles Nash, timber merchant, of Bristol, read an interesting paper on "Some Causes which have tended to retard the Commercial Progress of Bristol." After general remarks on the interest attaching to the study of the causes of the advance or decline of great cities, an extract from Seyer was read in proof of the importance of Bristol in early times, showing that in the thirteenth century the citizens carried out a great improvement in their harbour. In the next century, when Edward III. fitted out an expedition against France, London contributed 25 ships and 662 sailors, and Bristol 22 ships and 608 sailors. The prevalent idea that Bristol was now a declining place was then combated. Its population, wealth, and commerce are all greater than ever, and are rapidly increasing, although the rate of progress has not been equal to that of Liverpool, Glasgow, and one or two other towns. The question was then asked—Why has a city, with almost unrivalled natural advantages, with a safe channel only a few miles distant, surrounded by mineral wealth, and with all the prestige of historic greatness, lost its place of second city in the kingdom? The first reason given was the difficulty experienced in the last century from the want of floating accommodation for the shipping frequenting the port. Every tide the vessels were left on the ground, and thus damage often occurred.

From 1765 to the end of the century, one plan after another was proposed and laid aside, until, in the year 1802, Jessop's was adopted with some modifications, and the existing floating-harbour was commenced. The estimate was 200,000*l.*, but the cost was 600,000*l.*, and from this circumstance arose the next cause of retarded progress. Oppressively high charges were imposed to eke out a dividend, and thus the advantages of the improvement were partially neutralised. The trade increased so slowly that in the third decade of the new works the dock receipts were only one-third greater than in the first, while heavy town-dues and other charges increased the pressure. It was stated that since 1848 the foreign trade of Bristol has increased threefold. The next cause named was the want of accommodation for large ocean steamers, which are now conveying the most valuable part of the trade of the country. Bristol proved Dr. Lardner to be wrong, and when the *Great Western* had triumphed, nothing was wanted here to secure the West Indian and North American mails but suitable accommodation. The opportunity was lost, and Liverpool and Southampton obtained the prize. The *Great Britain* was built only to leave us for ever, and even the *Great Western* was soon afterwards withdrawn. After many schemes for supplying this want had failed, the Channel Dock Company was formed, and is now actively engaged in constructing a dock of fifteen acres at Avonmouth, with an entrance wide enough for any ship but the *Great Eastern*.

Another more recent cause was then noticed at some length—the want of agreement among the commercial men of Bristol: divided counsels have hindered many onward movements. As instances of this pulling in different directions, the defeat of the Bristol and Clifton Railway Bill by two or three influential individuals, and the Parliamentary contest of 1863 as to the great river deepening scheme, and the construction of docks at Avonmouth, were noticed. A truce ensued, by the terms of which the river improvements are going on, but on a reduced scale, although still perhaps too large and costly for the results to be obtained; and the Channel Docks are also being constructed. The fact of these large works, as well as the Portishead Pier, the Harbour Junction Railway, and extensive street improvements all going on together, was noticed as a proof of the life now stirring in Bristol. Most of the causes enumerated may be classed under four heads:—Deficient water communication; faulty railway arrangements; high charges, and divided counsels. They are enough to have stopped altogether the growth of a place less favourably situated than Bristol. The paper concluded thus:—"And now that many of these causes are removed, or are in course of removal, a second youth has developed itself in Bristol. The suburbs are extending in every direction; new public buildings, warehouses, and manufactories are rising in our midst; and the foreign trade is increasing more rapidly than at any former period."

NEW WORKSHOPS FOR BLIND PERSONS IN LIVERPOOL.

The foundation-stone of new workshops for blind persons able to work has been laid in Cornwallis-street by the Archbishop of York. The site, containing about 1,000 yards of ground, has been granted by the corporation. The building, according to the local *Journal*, is to be of a horse-shoe shape or plan, having its closed end to Cornwallis-street, and will cover, with the yard at the back, 962 square yards. It will have a frontage to the street of thirty-six yards. The centre portion of the front will contain upon the ground floor a vestibule, show-room, manager's office, and principal staircase leading to the two upper floors of the central block. There will be on the first floor a committee-room, library, and lady-visitor's workroom, lavatories for lady-visitors, and for workwomen, adjoining their workroom in the left-hand wing. Along the back of these rooms there will be a corridor from the landing of the stairs, leading to the women's workroom and to a large room in connexion with it in the left wing, to be used for the holding of classes, women's dining, and general gatherings. Upon the top floor of the central portion is arranged house accommodation of four rooms, with scullery, pantries, &c., for resident officers. The wings right and left of the centre, with the exception of the floor on the left-hand, are devoted to class-room, &c., and will be occupied by the several trades carried on in the institution, viz, basket-making, mat and brush making, &c. The basement of the wings will be used for stores and the preparation of the willow rods, &c., for the basket-makers, and under the central portion will be a dining-room and lavatory for the workmen. Provision will be made in the gateway and porch for sheltering the children or others who guide the workpeople to and from their work. The staircases will all be of stone, providing easy access to the several workshops, and safe egress from them in case of fire or accident. The whole of the floors, except those of the house part, will be carried upon wrought-iron girders, and the principal part of the floor will be of fire-proof material. The whole of the workshops, corridors, and staircases, class-room, and dining-room, will be warmed and ventilated with constantly changed hot air. Externally, the building will be faced with cream-coloured bricks and red-stone dressings; and the style of its architecture is to be Pointed Gothic of the simplest character. The architect is Mr. G. T. Redmayne; and the builders are Messrs. Haigh.

MORE ABOUT FLYING.

It is one fortunate privilege of the humble undersigned to have "many adversaries." He may not possess the pleasure of their acquaintance, neither need they in the minutest measure know him; but he can nevertheless afford to thank his foes for their constant and notorious zoilistic kindness. Every smallest lucubration of that happy but persecuted individual, whether it be poetic or prosaic, or both or neither,—whether breaking a lance for Byron or taking a fly with Dædalus,—is through them forthwith by common consent fiercely assailed and thereby advertised, and soon made famous by their ridicule and censure; by reason and means whereof the light shuttlecock of reputation is kept well in the air (unintentionally, doubtless, because to a certain person's benefit) through the blessed and inexorable battledores of spleen. Long may such useful slanderers flourish; and so let them help to keep a man at peace in the midst of notoriety, and of a good English courage withal, in spite of the stilettos of those healthy hornets.

But to my brief text after this just personal exordium: "More about Flying." Well, that exordium has some small warrant even as to our present aërial hobbyhorse of human flight; for my short panegyric on the virtues of flapping has been perverted at length, even in a full London leading article, into total denial of the expediency of levitation. No one ever said this,—or meant to infer that comparative lightness would be no advantage to the flying human. By every means give us elevating power through a lighter gas, if any can. Some sort of "tame gunpowder," or woven gun-cotton to be leisurely exploded in detachments on a regulated-cracker system, or some exhalation of extraordinary buoyancy yet to be discovered by the chemists,—these, stored in a vertebral tunnel, with lateral tubular appendages, might well be imagined as helps to our heavy manhood (or, perhaps, better as lifters of the machine in which he sits), before and beside the potent flapping mechanism, which must ever constitute the main motive-power for flight. We may reasonably recollect that no bird has anything analogous to ballooning for its elevation; feathers may be the lightest clothing, and hollow bones the least ponderous of skeletons; but anyhow, so far as we can discover, there is not only no lighter gas in them by way of lifter, but actually all accessories, even to the downiest of pinions, are heavier than common air. It is possible to buy a pound of feathers. If, then, we men may avail to help our weighty material by carburetted hydrogen or some new gas lighter, and shall add to this levitation a tireless and unlimited flapping power by clever mechanism, we ought manifestly to be able to beat the birds; and it only requires the shrewd inventor to arise—as he soon will—to enable us to do so. Where is the Faraday to levitate our grossness by that lighter gas? Even dining tables float up to the ceiling nowadays; sometimes not without (so seers and believers have testified) spiritualized men-mediums upon them! If there be some natural secret here (and who shall say there is not?) it behoves our Royal Society physicists to find it out. And when this is "found and made a note on," where is the ingenious mechanician to fabricate steel muscles for our breasts and shoulders, and to give us the strong but light and delicate tissues wherewith we may float on wings? Such things remain to be discovered; and in these stirring days of energy and competition will probably be caught by their predestined inventor, before the nineteenth century is ten years older. Wealth and well-earned honours await any such inventor; and the *Builder* is the inventors' organ, for which cause we drop our word in here. If Whitworth and Fairbairn, as consummate earthly artisans, are worthy of the "bloody hand of Ulster," what glory short of straw-

berry-leaves should crown the head of the coming discoverer of the heavenly art of flying? Ambition of every kind, from Consols to the peerage, herein may find fulfilment,—in that near but future day; but just now no doubt we are practically hounds at fault, barely scenting, and not finding: the present cover-beater has but little help to offer, beyond throwing out a suggestion, giving an idea to the winds, and bidding any one catch and keep it as his shrewdness best can. For human flight we must imitate birds rather than bubbles, and get all help from chemistry for a lighter gas to levitate our flesh and bones, as well as from mechanism, to supply us with stronger muscles.

Martin F. Tupper.

THE NEW CITY AND COUNTY BANK, KIDDERMINSTER.

The new bank is now nearly completed at the corner forming the angle of High-street and Vicar-street. It is on the site of premises heretofore occupied by the same establishment (the Worcester City and County Banking Company), but which premises were ill calculated for banking purposes, whether as regards arrangement or substantiality. At present the business of the bank is conducted in other premises near at hand, rented temporarily while the new bank is being raised, and the opening of which will probably take place in the course of a few weeks.

The building was designed by Messrs. H. & E. A. Day, of Worcester, and completed under the supervision of the junior partner of that firm, Mr. Ernest A. Day.

Owing to the irregular shape of the site, and the small depth of frontage in High-street, great difficulty was experienced in providing the necessary requirements of the establishment. This was to some extent, and with regard to appearance, overcome by the introduction of a portico at the angle formed by the two streets. Mr. R. Thompson, of Kidderminster, is the builder. Mr. Getling was the clerk of the works. The contract for the building was 3,550*l*.

The frontage to Vicar-street is 69 ft. 9 in. long, exclusive of the portico. White brick, with freestone dressings, are the materials used in the face-work, and the structure consists of two stories, divided on the outer wall by an enriched stone string-course. At the base is a plinth of freestone, moulded and sunk. On the ground floor is a series of segmental-headed windows, and on the chamber floor there are semicircular-headed ones, the arches springing from pilasters having carved caps, and the key-stones with moulded capping: there is a stone balustrade to each window. The entrance to the manager's house is by a doorway near the centre of the Vicar-street façade, while the bank entrance is by the portico before named. The slated roof rests on a cornice, which has a panelled soffit, moulded and cut cantilevers, and stone frieze; and the brick chimney stacks have stone panelled and bracketed caps.

Entering by the portico or colonnade we observe four Ionic columns, supporting an entablature and balustrade. We then pass into a lobby underneath a semicircular arch, having on its carved key-stone a shield bearing the City and County Bank arms; and next into the principal banking-room for public business. This apartment is 27 ft. 8 in. by 23 ft. 5 in., and is 20 ft. high. There are four columns of Bath stone standing on moulded and panelled pedestals, and having capitals sculptured after the model of the Temple of Jupiter Stator, supporting an entablature, from which springs a panelled coved ceiling, and in the centre of the ceiling is a circular wheel light, sufficient for the requirements of the banking-room. From the great bank-room doorways lead to the strong-room, the bank parlour, lavatories, and closets. The strong-room is fire-proof, being lined with glazed brick, and having a semicircular vaulted roof, an iron door, and thick stone slab pavement. The floor of the public bank-room is of oak, but encaustic tiles are laid down in the entrances, lobbies, halls, staircases, lavatories, &c. Fine oak, panelled and varnished mahogany, and red deal have been used for the doors and internal woodwork generally, the doorways in the principal apartments having moulded architraves, with cushion frieze and moulded heads. The manager's entrance-door has a fan-light with segmental head, moulded spandrels, and square top. A half-glass screen separates the lobby from the entrance-hall; then, passing under a semicircular arch resting on pilasters having carved caps and moulded archivolts, we arrive at the principal staircase, which is lighted by a lantern 30 ft. above the ground-floor level, with a coved ceiling and ornamental panels. The staircase is fitted up with close carved face-strings, moulded wall-strings, turned balusters, moulded hand-rails, and turned and carved newels. There is a drawing-room 20 ft. by 17 ft., a dining-room 24 ft. by 17 ft., eight bed-rooms, bath-room, closets, store-room, cellaring, servants' staircase, kitchen, scullery, china-closet, cook's pantry, coach-house, stable, and all other usual offices. The bank is heated by a hot-water apparatus, supplied by Messrs. Rimmington & Son, of Skipton, Yorkshire; Mr. Whetstone, near Leicester, laid the tiled floors; and Mr. Forsyth, of Worcester, did the carving. At the rear of the premises is a small garden, which will probably be enclosed by a wall having an ornamental balustrade, and a gateway with panelled doors and pillars with ornamental caps.

OPENING OF SHREWSBURY MARKET HALL.

The new General Market and Corn Exchange at Shrewsbury is so far completed that it has been formally opened for use. The building is in a mixed style of architecture, and is built of blue, red, and white brick, with Grinshill stone dressings. Its total length is 313 ft., and its greatest breadth 150 ft. On the basement are fifteen vaults, for the storage of goods, with inclined roads leading thereto. At the entrance the cart-way is 10 ft. wide, and in the centre 24 ft., so as to permit of a wagon going to the entrance of the vaults, and of turning, previous to coming out. This approach to the vaults is from Claremont-street. On this floor are also a number of shops, the fish-market, and the ice-house; and here, also, it is intended that the heating apparatus shall be fixed.

The ground floor consists chiefly of the general market, the vegetable market, the arcade, the butchers' market, and a number of shops. The general market is well lighted and ventilated, and so, indeed, is the whole of the building. There are six entrances to this portion of the building (the general market), the principal one being from Mardol, by means of an arcade 16 ft. wide. In Claremont-street a covered cartway is being erected for the loading and unloading of goods in wet weather. The roof of the cartway will be of glass. The windows and doorways are all circular-headed, and the majority of the doors are made to slide, in preference to having hinges. The height of the Corn Exchange is 88 ft., and of the tower, which rises near it, 151 ft. The latter is surmounted by an ornamental iron vane. The tower is square, and has a large circular opening on each side for the clock dials, which will be four in number, and upwards of 8 ft. each in diameter. The clock will be supplied by Mr. Joyce, of Whitchurch; the bells will be supplied by Messrs. Mears, of London.

An improvement effected by the erection of the new building is the widening of the streets in the vicinity. Formerly, Shoplatch and Claremont-street were narrow and dangerous thoroughfares. At present Shoplatch is a street 40 ft. wide, while Claremont-street is 30 ft. At Mardol Head the width is 28 ft., and in Bellstone 30 ft.; and the whole have been re-metalled, curbed, the footpaths flagged, and in some cases the levels have been altered.

On the Shoplatch end of the Corn Exchange is a piece of carved work, in stone, representing, in figures of colossal dimensions, the allegorical characters, Peace and Plenty. The figures are 11 ft. 6 in. high, the shield 13 ft., and the length of the whole is nearly 25 ft. The figures project 2 ft. 6 in. The design was provided by the architect of the building, and the work has been carried out by Mr. C. Landucci, sculptor, Shrewsbury. The side of the market in Claremont-street very much resembles that in Shoplatch. The estimated cost of the building was about 41,000*l*., but of this 3,250*l*. were furnished by the Corn Exchange Company for the erection of the Exchange.

Immediately on entering the market from the doorway in Mardol, is an arcade with a row of pillars on either side. This space, it was originally intended, should be formed into shops; but as it was doubtful whether the general market would accommodate the whole of the market people, it has been left vacant till that question is solved. At the end of the arcade, and below the tower, are closets and other conveniences; and, immediately beyond, is the fruit and vegetable market. It has an entrance from Shoplatch, and one from Claremont-street, and communicates also with the general market and the arcade. It contains forty-eight stalls. Of these twenty-eight are arranged in rows down the centre; and the remainder are fixed around the walls. Along the centre of the general market are two rows of wooden stalls, the main "thoroughfare" of the hall running between them. They are thirty-six in number, and are so constructed that the salesman stands within, and has a counter in front and on one side. On the Shoplatch side are thirteen roomy, well-lighted shops. Behind the stalls, in the general market, are the benches for the market-people proper. The accommodation consists of long rows of tables for holding the commodities offered for sale, with seats on either side.

There are, at present, fifty-four tables, and it is calculated that each will accommodate eight persons, making a total of 432. The butchers' department is at the north-west corner of the building. It contains five shops and thirty-four stalls. Along the whole of the Shoplatch side of the general market runs a gallery, which is approached by a stone staircase at the Bellstone end, and one of iron at the opposite end. It contains six shops. The fish-market is situated at the Bellstone end of the building. It is somewhat below the street. Adjoining is a large ice-house, capable of holding about 200 loads of ice.

The vaults extend beneath the whole of the general market, and have a wagon entrance from Claremont-street, with additional incline communication with Mardol Head and Shoplatch. In the Claremont-street section are seven vaults, and on the Shoplatch-street side six. They vary in dimensions, but all are lofty, drained, and ventilated. The whole of the market proper has been fitted with gas. The general market will be lighted by twenty-two star-lights, with twelve burners in each, and the gallery and vegetable-market by bracket-lights. During the daytime the general market is lighted by a large lanthorn light. The corn exchange may be approached either from Shoplatch or from Claremont-street. It is 90 ft. long by 45 ft. wide, and at the ends it takes the form of an arc. It is lighted by a large lanthorn light, running the whole length of the room, by three bull's-eyes on one side, and large windows at each end. At night it will be lighted up by four star-lights, with forty-eight burners in each. In the ceiling, which is 52 ft. from the floor, there are eighteen large apertures for ventilation, and the room will be heated by hot air. Over the doorway is a small gallery. Adjoining the exchange is a settling-room, 17 ft. by 11 ft., and 22 ft. high.

The whole of the work in connexion with the market and exchange has been carried out under the superintendence of Mr. Price, as clerk of the works, from the designs of the architect Mr. Griffiths, of Stafford.

The *Shrewsbury Chronicle*, to which we are indebted for these particulars, gives a view of the new edifice.

OPENING OF BRECON COLLEGE.

The new Congregational College at Brecon has been opened. The site of the building is just above the station of the Brecon and Merthyr Railway, on the Camden-road, the ground for the purpose having been bought from the Marquis of Camden. The elevation of the ground adds to the appearance presented by the college, besides the advantages derived in a sanitary point of view. The college consists of a centre building with a wing on each side, leaving a considerable area between. The length in front is 152 ft., and the depth is nearly 100 ft. A tower, 100 ft. in height and 10 ft. square, projects 7 ft. from the line of the front. The design is Gothic, and the material employed is native stone, with dressings of Bath stone. The basement floor consists of a kitchen, 30 ft. by 17 ft., and 10 ft. high; scullery, 20 ft. by 16 ft.; wash-house, 30 ft. by 17 ft.; lavatory, 20 ft. by 16 ft.; and an arched muniment-room, fire-proof, 12 ft. by 12 ft.; large pantry under the tower; corridor, lumber-room, 16 ft. by 12 ft.; coal-house, &c. There are on the ground floor a dining-room, 35 ft. by 21 ft.; library, 35 ft. by 21 ft.; in the tower two wide flights of stairs leading into the entrance-hall; corridor, 6 ft. in width, extending the whole length of

the front; chief staircase, 16 ft. by 12 ft.; lavatory; four studies, each 11 ft. by 9 ft.; matron's room, 12 ft. by 12 ft.; store-room, 12 ft. by 6 ft.; staircase, &c. The height of the rooms on this floor is 13 ft. 6 in. On the first floor are two class-rooms, each 25 ft. by 16 ft., and 11 ft. high; 16 studies, 9 ft. by 12 ft., 11 ft. in height; a hospital; two servants' bedrooms, and large landing and passage. There are on the second-floor six studies, twenty-two bedrooms, each 12 ft. by 9 ft.; bath-room, and staircase leading to the tower. The bedrooms are 9 ft. 6 in. high. There is a yard for the use of the students 90 ft. by 80 ft. At each end of the college is a tutor's residence. There are two large oriel windows in the front of the college projecting 7 ft. outwards, and serving for the three lower stories, which are also lighted by square windows with mullions and transome, the bedrooms on the top story having dormer windows. The roof is pointed with coping and parapets of Bath stone. There are square buttresses projecting from the tower, and going to a height of several feet above the eaves of the building, and a good deal of stone dressing of an ornamental character. The studies and bedrooms are all fitted with ventilators, the former with fireplaces also. In part of the building there is a terrace 18 ft. long, and 56 ft. in width, with a road leading to the back. The college is well fitted up in every way for the convenience and comfort of the students. The contractors are Messrs. Watkins & Jenkins, of Swansea; the amount of their contract is 8,250*l.*; the extras will probably amount to 200*l.* or 250*l.* The plans were drawn by the Rev. Thomas Thomas, of Landore.

A FALL IN BELFAST, IRELAND.

A strange occurrence is reported by the local *Newsletter*. The inhabitants of Byron-street, Belfast, and that neighbourhood, were alarmed the other night in their beds by a sudden report resembling thunder, or the discharge of a battery of artillery, under their windows. In the morning it was found that the cause of the night's alarm was the total demolition of a whole street of new houses, fortunately as yet not occupied, which came down with a sudden crash. Doors, windows, bricks, &c., all lay in one heap of ruin. Where, the previous night, a row of partly-completed dwelling-houses stood, there was now a pile of rubbish and *débris*. The mystery was cleared by the production at the police-court of a man named Clarke, who, with a number of others, was found by two constables, immediately after the fall of the buildings, concealed in the vicinity. A subsequent search about the premises led to the finding of a number of strong ropes, like ships' hawsers, which leads to the supposition that the mischief was done by passing the ropes round the narrow walls between the lower windows underneath, and pulling down the buildings by sheer force. Eleven houses in one row have been completely demolished, and it was also found that in another line of buildings behind the interior walls had likewise been pulled down.

BUILDING TRADES' MEN IN THE ARMY.

His Royal Highness the Commander-in-Chief is not disposed to let the subject of the civil employment of the soldier fall to the ground. The Duke of Cambridge has sent a circular respecting the employment of soldiers in trades to Chatham, in which the attention of commanding officers is called to the approval given by the Secretary of State to such employment. Returns are now called for of all soldiers who have been educated in any of the building trades, — as carpenters, plumbers, painters, glaziers, bricklayers, and gasfitters. So far from there being any attempt to impose on those soldiers extra and uncompensated labour, it is proposed that the privilege of obtaining employment as a civil workman shall only be accorded to tradesmen-soldiers who have been in the service for two years, and who bear good characters.

The gist of the scheme lies, as we have more than once insisted, in the rendering useful employment acceptable to the soldier. The elevation in the social scale which he will acquire by the occupation of time that would otherwise be wasted, or worse, in the practice of a craft, cannot be acquired *nolens volens*. It must be *volens* alone. That a judicious management may make this supplementary service highly popular, we think there is no room to doubt. In the appropriate employment of the thews and muscles of a picked part of the population in useful works, lies an element, not at all to be neglected, of national wealth. The case should not be regarded from the miserable standpoint of trade competition. The burden imposed on the country for military defence forms no inconsiderable portion of our entire annual outlay. No very brilliant prospect is open as to the means of permanently reducing that outlay. The distinct tendency of the advance of science is to increase it. The right direction in which to look for the alleviation of the pressure is that of making, as far as may be, the service of our defence self-supporting.

TILE PAVEMENTS.

At the cost of the Freemasons of Bristol, Mr. William Powell, acting on their behalf, a very handsome pavement has been laid in the Lady Chapel of Redcliff Church. It is composed of varied combinations of rough encaustic tiles, with rich glazes of yellow, green, and black, being partly reproductions, and partly imitations of ancient examples. These tiles are especially made with a roughness in the body, which produces depth and richness of tone in the colours, and prevents the patterns from being too mechanical and true, giving them the spirit of the ancient work.

The tiles are of Messrs. Maw & Co.'s manufacture, and the pavement was executed, under the general directions of Mr. Godwin, by their London agents, Messrs. W. B. Simpson & Sons, who have lately given special attention to the introduction of this class of work.

A pavement lately executed by the same firm, under the direction of Mr. G. G. Scott, at St. Asaph Cathedral, is also a good specimen of tile work, the special characteristic in this case being the introduction of incised tiles of a coarse body, floated over with a richly-coloured glaze, in imitation of some ancient tiles recently found in the cathedral.

These rough tiles seem to us worthy of the notice of architects, as they are suitable for ecclesiastical purposes, especially in cases of restoration.

A mosaic chancel pavement has just been completed in Blackley Church, in memory of the Rev. Andrew Doria, who for seven years was curate of the parish, and who died at the age of 34, two years ago, at Lindow, the school church of which village he took the sole charge of on leaving Blackley. He was a lineal descendant of the Genoese branch of the Doria family, celebrated in Italian history as warriors, statesmen, and patrons of art. The pavement was designed and laid down by Messrs. Dale & Sons, Manchester.

THE THEATRE.

The Princess's.—The most noticeable point in the new drama here, "Escaped from Portland" (an adaptation of "Le Mangeur de Fer," which may be freely rendered The Bracelet Breaker), is the completeness of the disguises assumed by Mr. Chas. Mathews (*Gentleman Jack*), five in number. These even do what stage disguises seldom effect, deceive the spectators. Mr. Vining, too, plays several parts with much vigour. Mrs. Chas. Mathews is charmingly tender as *Lisa Tyrell*; and we must say a word for the intelligence displayed by a new young lady, Miss Carlisle. The scenery is bright and appropriate. A view of Putney Bridge, by Mr. Lloyds, makes the bridge much too low: the excitement caused by the fall from it, too, would be greater if the bridge were higher.

The Olympic.—This theatre has been very elegantly decorated, in the manner adopted at the Princess's, and by the same decorator, Mr. James Macintosh. Scroll ornaments are applied to both tiers of boxes, and to parts of the ceiling, and are richly gilded. The proscenium is wholly gilt. The curtains are of a dark cerise satin, and the backs and ceilings of the boxes are kept of the same dark colour. The effect of the whole is rich and comfortable. The *carton pierre* decorations were executed by White & Co. The house, now under the direction of Mr. W. H. Liston, has been opened with a version of "David Copperfield," titled "Little Em'ly," which is so good, and for the most part so remarkably well acted, that we may take an opportunity to refer to it more fully.

THE LONDON HOUSE PAINTERS.

At a meeting last week, at the Artisans' Club, in Newman-street, of members of different societies of house-painters and decorators, having for its object the formation of an association of workmen, for the purposes of technical education and improvement of the execution of work in painting and decoration, a statement was made by Mr. G. Shipton, general secretary of the Amalgamated Society of House Decorators and Painters, of the views of the executive council of that society. The statement was to the effect that employment in the trade might be greatly extended, to the advantage alike of the community and of the workmen and their employers, by directing public attention to the educational advantages and cultivated pleasure derivable from buildings decorated in harmonious colouring, and characterised by refinement of taste,—points about which great want of apprehension prevailed. By general improvement in the execution of work there would be a sufficiency of work at all times in the hands of employers of the better class, to the exclusion of those who are regardless alike of the interest of their customers and of demoralising effects on their workmen. The operatives would be more steadily, regularly, and pleasingly employed; the community, by systems of economised labour, and by cultivation on the part of the men and masters, would get better and more pleasing returns with less original cost. To effect practically such objects, the proposal was to establish a school or system of class instruction for education in matters technical, or otherwise, related to the special industry, the instruction being confined first to what would be most useful in daily work. This instruction was proposed to be given indifferently to society or non-society men, whilst backed up, and perhaps in the first instance set going, by the trades' societies, whose organisation could not but be valuable for such a movement. Several members spoke to the same effect. There was a slight difference of opinion about the extent to which the association should supply qualifications to those men who had never passed the training of an apprenticeship; but ultimately resolutions were passed affirming the want of such a society, appointing a committee, and arranging for a second meeting.

A STRANGER ON THE THAMES EMBANKMENT.

Sir,—On Saturday morning, the 9th instant, curiosity led me to take a morning walk along the Thames Embankment. The morning was beautiful and fine, but, without any more novelistic preliminary, I shall come to the subject of my remarks. As I expected, from the description which I have read in the *Builder* and the London daily press, the river wall, as a work of tidal engineering and the building art, is all that might well be desired; but here my encomium must finish. Now for the footway or roadway between Westminster Bridge and the Temple: it is open to the gravest criticism and censure, for a variety of reasons. The flagging of the footway is one of the most unworkmanlike pieces of work I have met with for some time. In the first place, the flags are badly laid, and worse jointed, and there is hardly any attempt to obtain a uniformity of level. I do not mean to say that a level could be carried out, strictly speaking, between Westminster Bridge and the Temple, but I do mean to assert that the unsightly up-and-down appearance, so painfully and palpably apparent, could have been avoided. In following the direction of the river there is nothing more easy to obtain than a certain uniformity in the rise and fall of the roadway; but from almost every perch in some parts of the Embankment a wave-like undulation can be seen.

I have said that the flags are badly jointed, the outer half of the footway being wretchedly so. I looked again and again to convince myself, and I almost came to the conclusion of believing that one-half of the footway had only been temporarily laid, for hundreds of the flags lap at their joints one above another ¼ in. and in some cases ⅜ in. None of the open gratings which protect the trees, and which are let in in quarter divisions, in the flagging, preserve their level, but are quite unsightly in appearance, being up and down, although the work is but quite recent. In fact, one half of the Thames footway is taking its good-bye from the other half, and exhibits all the features as if the shock of an earthquake warned it that its hour of settlement had come.

Another very grave complaint I have also to make. The entire length of the footway of the Embankment is very filthy, particularly along the angles between the flagging and the bottom of the river-wall. Dirt has accumulated in many places to the depth of 2 in. or 3 in., and I regret to observe offensive nuisances are allowed to remain unmoved in the "set-offs" and breaks along the wall. Surely a dustman or two, with hand-cart, might be told off every morning for keeping this, what might be a beautiful promenade, clean. Notice should also be put up; and where any infraction of the rules of decency is committed, the delinquents, when discovered, should be summarily and rigidly punished. I have also noticed that in the ebb and flow of the tide much mud is drifted up on the stone stairs and landings. This, on the fall of the tide, should be at once swept down, as, besides being dangerous, its appearance is anything but a pleasurable sight.

The Thames Embankment requires at once a Conservancy appointed as well as the river Thames itself; and if something approaching to this power be not vested either in the police authorities or in a separate body, our river-side roadway and esplanade, instead of becoming a blessing and an improvement to this mighty city, will become an eyesore and a questionable advantage to the citizens of London.

Some remarks have already appeared in the daily press concerning the invasion made by the wild boys and tomboys of the streets of this favourite lounge, and the unlimited licence enjoyed by this wanton and uncultivated stratum of the town. I would not debar one of God's humblest creatures from the participation of an enjoyment, no matter what its garb might be; but at the same time I would have order and decorum enforced, and all riotous behaviour put down with a strong arm. These are the views, whatever they are worth, of

A Stranger on the Thames Embankment.

SCHOOLS OF ART AND SCIENCE.

The Reading School.—The annual distribution of prizes to the successful students of this school took place at the town-hall. There was a very good attendance. The hall was hung round with numerous specimens of the work of the students. The chair was taken by the president of the society, Mr. D. Higford Burr, of Aldermaston Court. The annual report stated that—

"With regard to the present year, although numerically the school is no stronger than it was, the committee believe that in the various departments its efficiency has been considerably increased. Drawings executed by forty-seven students during the year were transmitted to South Kensington in March last, in accordance with the regulations of the department. Of these, three were awarded prizes, whilst forty-four received marks showing that the pupils by whom they were submitted had received sound instruction. At the local examination held at the school on the 9th and 10th of March last, eighty pupils attended. Of these twenty-seven were pronounced good, and six excellent. The latter received prizes, the former cards of merit. A communication has been lately received from the Department in which the establishment of science classes is recommended in connexion with schools of art. In deference to this recommendation, and believing that the instruction thus afforded will be valuable to many, it is proposed next term to form classes for teaching the following subjects, viz.:—1. Practical plane and solid geometry; 2. Machine construction and drawing; 3. Building construction."

Mr. Havell, the master, read the list of prize winners, who received their prizes from Mr. Burr. The meeting was afterwards addressed by Dr. Wells and other gentlemen, and a vote of thanks was given to the master by acclamation.

The Oxford School.—A large and deeply interested meeting, comprising a great number of artisans and mechanics, was held at the Town-hall to hear the report of the proceedings of the science classes which have been in operation during the past year in Oxford, the success of which is said to have been alike creditable to the students and to the teachers. The Rev. J. E. Thorold Rogers occupied the chair. After the report of the committee was read, Mr. Buckmaster addressed the meeting. At the close of the proceedings, it was unanimously resolved,—"That the amalgamation of the science committee with the art school is desirable for the purpose of forming a combined School of Science and Art." The Oxford school of art was established four years ago.

A Watford School.—A class in connexion with the Science and Art Department of the South Kensington Museum has been formed at Watford, and several gentlemen have consented to act as a committee of management, with Mr. A. T. Brett as chairman. Mr. J. B. Fairman is the teacher of the class, which meets on Thursday evenings in the room under the Literary Institute. The payment by the members is merely nominal (9d. per month), and is only intended to meet the incidental expenses. The science now engaging the attention of the class is "Animal Physiology," and the lessons are illustrated by diagrams, dissections of animals, and the microscope. Mr. Buckmaster has given a lecture (Mr. Brett in the chair), at the Literary Institute, in reference to the Government scheme for promoting a knowledge of the principles of science and art.

THE NEW OFFICES FOR THE POPLAR DISTRICT BOARD OF WORKS.

Since the issue in which we announced the discontinuance of these works, the differences of opinion between the builders and the architects have been discussed at several meetings of the Board. An earnest desire has been expressed at these meetings that Messrs. Baker & Constable, the contractors, should complete the erection, and, by order of the Board, they have been formally called upon to re-proceed with the carrying out of the contract. Messrs. Baker & Constable, however, declined to do so; and have placed the matter in the hands of Messrs. Noon & Davies, solicitors, who, on the part of their clients, have served a writ upon the Board for non-compliance with the provisions of the contract, in refusing payment for work actually done. On the other hand, the architects, Messrs. Hills & Fletcher, and Messrs. Harston, stoutly refuse to certify for the amount demanded by the builders, and state their conviction that they are perfectly justified in withholding the certificate, inasmuch as timber had been supplied which was not in accordance with the contract, and that under the circumstances it was competent for them to require that the timber to be henceforth used in the building should be deposited on the premises before certifying for further payment. The members of the Board appear to be greatly annoyed at the phase the affair has assumed, and at their last meeting decided to make a stand against the action taken by the contractors. It was agreed that as the builders preferred litigation rather than to proceed with the contract, the Board had no other course open to them but to invite, by public advertisement, tenders for the completion of the building; and it was resolved to institute the necessary proceedings against Messrs. Baker & Constable's securities for the recovery of any loss which the Board might sustain in consequence of the non-fulfilment of the conditions of the contract.

ACCIDENTS.

A "Steeple Jack," Thomas Butterton, of Every-street, Manchester, has met with his death while repairing a tall chimney at Mr. Farmer's chemical works, West Gorton. The rope by which he was holding on broke, and he fell from a height of twenty-three yards.

A fire has occurred at the Crystal Palace High Level Station of the London, Chatham, and Dover Railway. The firemen of the palace and those of the metropolitan brigade quickly attended, when it was found that about 8 ft. of the staircase had become ignited, but by the use of hatchets and water the fire was soon extinguished. It was caused by the overheating of a flue.

NEW VOLUNTEER QUARTERS, LIVERPOOL.

The First Lancashire Volunteer Regiment of Rifles having found that the storehouse now occupied by them in St. Anne-street, Liverpool, does not afford that accommodation which the rapidly-increasing strength of the regiment demands, have, at the cost of two of the commanding officers, been enabled to purchase a site for a new drill-shed, the erection of which will be proceeded with forthwith.

The new quarters, which will be situated at the corner of Low Hill and Gloucester-place, will consist of the drill-shed proper; length, 220 ft. by average width 72 ft., and the usual storehouse, armoury, magazine, officers' quarters, &c.

The local architects selected to design and carry out the work are Mr. C. Sherlock and Mr. T. B. Troughton, jun., of the firm of Troughton & Prescott, of this town.

THE LIONS AT SALTAIRE.

Sculptured representations of the lion are to grace the open spaces in front of the Mechanics' Institute and the schools at Saltaire. These lions were designed by the sculptor, Mr. Thomas Milnes, of London, for the base of the Nelson Column in Trafalgar-square; but, after he had completed the models and made preparations for proceeding with the work, the commission was taken out of his hands and given to Sir Edwin Landseer. In the meantime the models remained in Mr. Milnes's studio, where they attracted the notice of Sir Titus Salt. Mr. Milnes is the sculptor who executed the bust of Sir Titus, which was presented to him a few years ago by his workpeople, and is now at his seat, Crow Nest. Sir Titus was desirous of having the lions at Saltaire, and after a consultation with Mr. Lockwood, his architect, it was decided to place them in front of the buildings named, two on each side of the road. The lions are four in number. Two of them have just arrived, and one has been set up on its pedestal. They have all been modelled from animals in the Zoological Gardens. The figures are each 8 ft. long, 3 ft. wide, and 5 ft. high. They have been sculptured in Pateley Bridge stone, and the weight of each is nearly 3 tons.

ANCIENT FOUNTAIN IN FREIBURG.

The town of Freiburg-in-Breisgau is justly celebrated for its magnificent minster. Few more interesting churches exist in Europe, and it would be difficult to find one which offers a more beautiful subject, or collection of subjects, to the pencil of the artist. No engraving can give an idea of the great beauty of this cathedral, as one of its greatest charms is the exquisite colour of every portion of the building. The stone of which it is built is of a delicate crimson tint, and is overgrown with lichen of the richest orange. Nor is the interior less remarkable for its picturesque beauty, as nearly all the windows are filled with old stained glass of the most brilliant description; and most of the altars are ancient, some of them adorned with pictures of great merit. The high-altar pictures are the works of Hans Balding Grün, and were painted at the beginning of the sixteenth century. Over an altar in one of the side aisles of the choir is a painting by Holbein; and over another, a large silver crucifix of very early Romanesque work. The pulpit, which is ornamented with statuettes in bronze, is said to have been carved by an artist of the name of Hauser in the year 1561; but from its appearance, and the entire absence of Italianism in its details, it might date from fifty or sixty years earlier.

The other churches in Freiburg are not very remarkable.

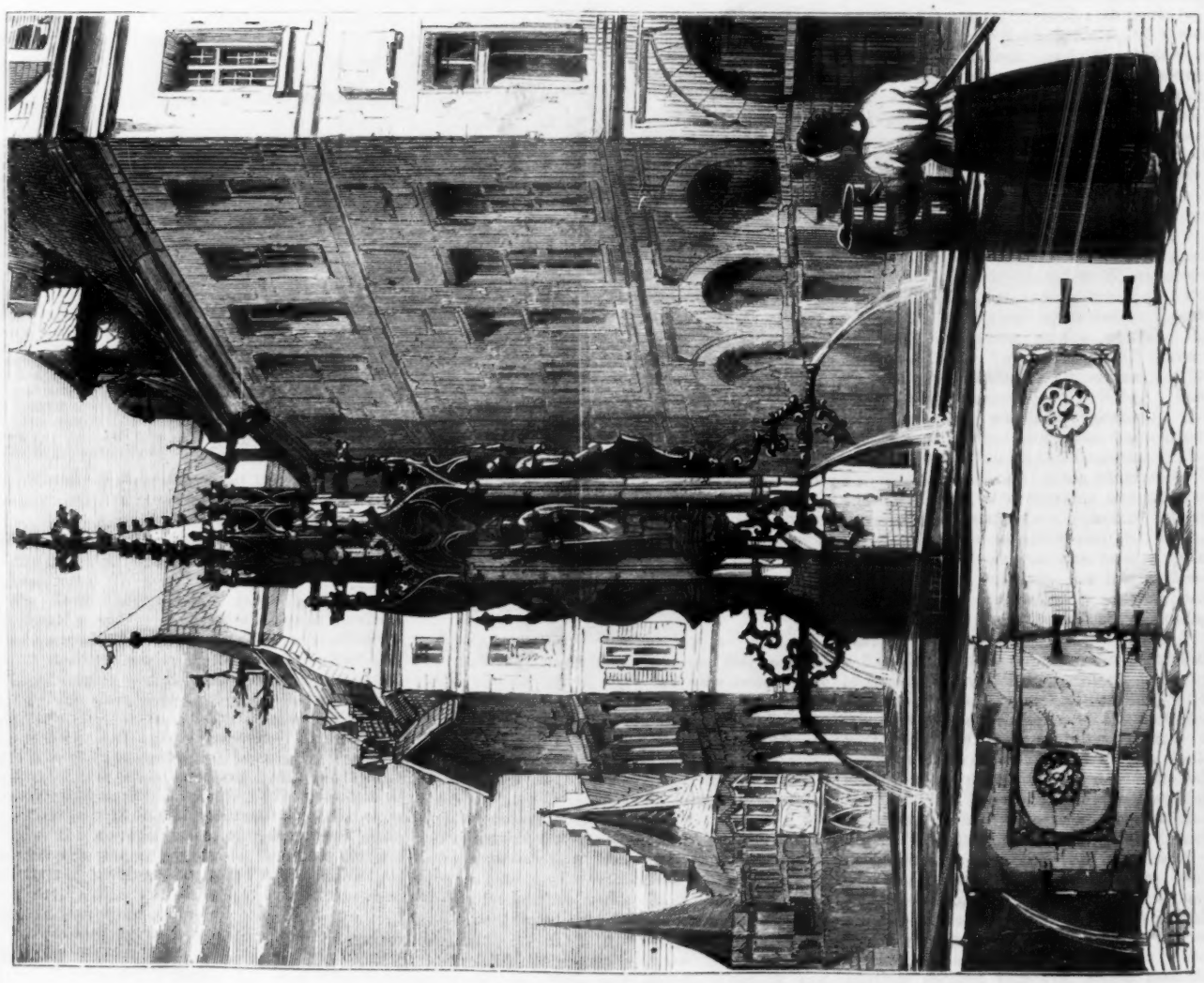
The Protestant church is noteworthy from the fact that it originally stood at Thennenbach, and was removed here "*stone by stone*" (*?*). Probably it was, in its original condition and position, a fine and interesting abbey church; but its "*removal*" and "reconstruction" have robbed it of all interest, and as it now stands it is a dry, hard, lifeless Romanesque building. The doorways, however, which are probably the only portions of the building that have been really "reconstructed," are good examples of the style. The interior consists of plain whitewashed walls, entirely devoid of ornament, and painted deal galleries and benches,—a precious "reconstruction" of an ancient abbey church!

The Minorite church has been a good fourteenth-century building, but has suffered from modernisations perpetrated during the last century. It contains a good set of stalls, and a curious cloister.

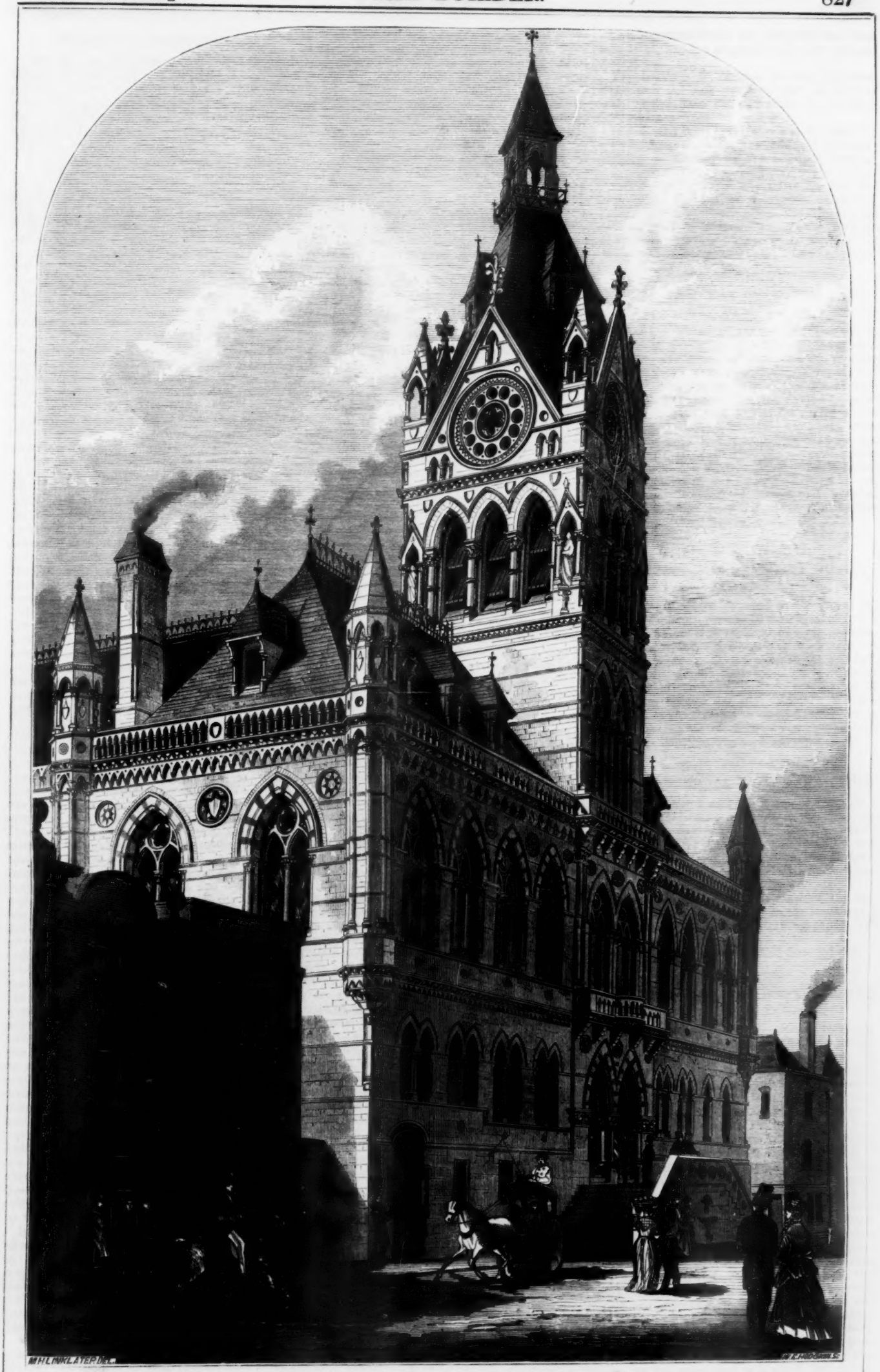
The Kauf-haus, opposite the cathedral, is a charming little Gothic building, built upon an arcade of four segmental arches, with bow windows at each corner, and the font decorated with rich niches, containing statues of the German electors. The roof of this building is shown in our engraving to the extreme left. Not far from the Kauf-haus is the beautiful little fountain of which we give an illustration. It is built of red stone, with white stone figures. Its probable date is about the year 1480. It is ornamented with four large statues, two representing bishops of Freiburg, and two of them knights in full armour, probably intended to represent counts of Zähringen, the original possessors of the town. Opposite the cathedral is another ancient fountain, which had the misfortune to be "restored" about thirty years ago, and has been quite destroyed in the process.

MR. ALFRED WATERHOUSE,

Architect of the Manchester Assize Courts and Manchester Town-Hall.



ANCIENT FOUNTAIN IN FREIBURG, GERMANY.—Circa A.D. 1480.



CHESTER TOWN-HALL.——Messrs. Lanyon, Lynn, & Lanyon, Architects.

CHESTER NEW TOWN-HALL.

For the last ten years or more the subject of town-halls has been prominently before the public; and we doubt much if there be a town-councillor living, however small and insignificant the corporation to which he belongs, whose attention has not been, at some time or other, officially directed to the question.

An alderman of the present day is not content, as were his predecessors, to spend the time that he is called upon to devote to municipal affairs in the small, dingy, and often unhealthy rooms that collectively were dignified with the title of town-hall. He seems to think, and justly too, that if he gives his time and labours gratuitously to promote the welfare of his fellow-townsmen, the least that they should do for him in return is to provide a suitable building in which all the offices connected with his duties may be brought into convenient proximity in order to make the necessary calls upon his time in visiting them as small as possible. Many men with large businesses to attend to willingly devote part of their day to public matters, when they know that every opportunity is seized of lessening useless waste of time, and so obtaining the greatest result for the amount of labour bestowed, who would not consent to the old system of trotting from one corner of a town to another whenever a fresh department had to be visited.

That the new building erected upon this principle of concentration and saving of time and labour should be handsome, and an ornament to their town, is only a natural result of the wide-spreading influence that our art publications and instructors have produced on the mind of the general public during the last quarter of a century. Whether the public hall of one town is finer or more costly than another, is a subject that the citizens of rival communities will now very warmly argue.

A glance over our past numbers for the last decade will show a long list of new town-halls; and add to these the number that are nearly finished, or for which designs have been submitted in competition, and the sum total is really imposing. The influence for good that some of these exert on the minds of the population is invaluable.

The corporation of Chester at length, tired of plodding on in the old style of conducting their municipal business, determined to have a new town-hall; and in the spring of 1864 issued their instructions, and invited architects to submit designs in compliance with them. Their call was very numerously responded to, and a fine array of architectural essays was the result. The local professionals, to a man, we believe, came to the scratch, and the picked men of London, Manchester, Liverpool, and Dublin entered the lists. Upon the receipt of these designs the corporation, with a due and praiseworthy sense of their responsibility that it would be well for other municipal bodies under similar circumstances to imitate, retained the services of Sir Matthew Digby Wyatt, to examine and report upon the plans. After a lengthened scrutiny, he sent in his award, in which he stated that "the design sent in under the motto, 'Love's Labour' is by far the best;" and "I would therefore respectfully recommend that the premium of 100*l.* should be awarded to the author." "No one else has succeeded in the combination of so many good points." "There is an air of quiet dignity in the well-balanced proportions and elegant forms of the design under discussion, which is, to my eye, wanting in anything like the same degree in any of the other designs." On the matter of the estimate, the report goes on to say, "that while 'Love's Labour' is the best design, it is far from being the most costly;" and then compares it favourably with a design, the quantities of which had been taken out by a surveyor, and an estimate obtained upon them under the amount suggested by the instructions.

In the face of the above, however, strenuous efforts were made by some members of the council to have "Love's Labour" rejected; but the majority had the grace to abide by the award of their professional adviser. On opening the sealed envelopes containing the mottoes, "Love's Labour" was found to be the work of Messrs. Lanyon, Lynn, & Lanyon, of Belfast and Dublin.

We lately gave a plan and view of the first-prize design for the "New Houses of Parliament, Sidney," submitted in that international competition by Mr. W. H. Lynn, a member of this firm.

The new town-hall contains on the lowest or ground-floor the hall-keeper's rooms. The police department has a separate entrance in Princess-street, and includes the prisoners' cells, which are placed under the Quarter Sessions Court. Direct communication by staircase is provided from these cells to the docks of this and the police-court. The kitchen and its offices are on this floor, and it is connected with the council-chamber by a lift and turret stairs for the use of servants. The entrance for the public to the courts is also on this floor, at the back corner of Princess-street, from which steps ascend to the level of the public corridor. The principal entrance is approached from the road by a double flight of broad steps, with pierced parapet in front, and steps in the porch under the central tower. The porch has a double-arched entrance and groined ceiling. The tympani of arches round the sides of this porch, and the principal doors to the same, have figure-subjects carved in stone, by Messrs. Williams, of Manchester, from models designed by Mr. S. F. Lynn, sculptor, late pupil of Mr. Foley, and gold medallist, illustrating events in the history of Chester.

On the principal floor, as well as on the one above, the front portion is devoted to the use of the town-hall proper; and the rear part to the courts and their offices. The principal entrance leads into the grand staircase-hall, from which corridors branching right and left lead to the municipal offices. By passing directly under the first landing of the principal stairs, the public hall is reached. It is placed between the courts, that on the left being the quarter sessions, and the one on the right the police-court. In connexion with these are judges', justices', lawyers', and witnesses' rooms, &c.

The upper or council-chamber floor is gained by the grand central staircase. The mid-landing of this stair is open to the public hall, with three arches. The ceiling over is boarded and stained and varnished, forming a semicircular apse;—an arrangement which considerably enhances the effect of these apartments. From this landing a separate flight of steps turning to the right, over the justices' passage, behind the police-court, leads to the lower end of the council-chamber, by which means the general public may have access to the chamber, without necessarily passing through the lobby, or near the rooms in immediate connexion with the council-chamber. The mayor's parlour is placed in the centre, under the tower, and between it and the council-chamber on the Princess-street side is an ante-room, and, on the opposite, are two committee-rooms. All these rooms are *en suite*, for the convenience of receptions and public banquets, &c., and the walls panelled for about 4 ft. in height; the ceiling being treated with diagonal boarding arranged in patterns.

The opposition party in the council that tried to turn out the design originally, not content with the failure of their first efforts, have continued their labours, and in every possible manner attempted, and in many cases with a fatal result, to thwart the intention of the more liberal party that was anxious to have the work well and handsomely finished. We learn, that it was by the councils of the former that the grand staircase-hall is lined with red brick, instead of ashlar, an accident that has very much detracted from the finished appearance of this composition.

The first contract was for 21,600*l.*, and included heating, plumbing (internal) carving, grates and chimneypieces, fireproof flooring, &c. The estimate for the tower was subsequently entered into for 1,980*l.*, and both by Messrs. Clarke & Son.

A strike occurred on the subject, we believe, of the clerk of works, and long delay in the progress of the building followed; during which time the contract changed hands, Mr. Thomas Hughes, of Aldford, eventually completing the works.

The building is executed in white sandstone, relieved by bands of red Runcorn stone, and shafts of slate, with the exception of those to the principal entrance, which are of polished Aberdeen granite.

The external doors are of oak, and the interior woodwork, generally, is of red pine.

Messrs. Edmundson have supplied two circular stained-glass windows, one of which is placed in the public hall, and one in the waiting-hall.

The gasfittings, and ironwork generally, have been supplied by Skidmore, of Coventry. The roofs are covered with green slates. Mr. Hughes, the contractor, delivered up the keys of the building to the town council on September 30th.

Mr. J. Pearce was the clerk of the works, under whose superintendence the town-hall has been completed, and the preparation for the opening carried out.

The building is situated between Princess-street and the new markets, and can be very fairly viewed from the west front of the cathedral, which it faces.

H.R.H. the Prince of Wales was to open the town-hall in state on the 15th of October; arriving in Chester on the previous evening, and remaining during Thursday night at the Grosvenor Hotel, which was taken for him and his suite by the Earl of Grosvenor. Hoarding was set up at the ends of all the streets past which the royal *cortége* would pass, to prevent crush, and stands were erected in front of the town-hall to accommodate about 3,000 persons.

"THE COCK MAY CRAW, THE DAY MAY DAW," &c.

Sir,—The writer of the article, "News from Ireland" in the *Builder* of last week cannot be an Irishman, else he would not express any surprise at the Galway town commissioners laying out 1,000*l.* "in connexion with the water-works," and refusing to grant a farthing for the repair of the town clock. Had he been a native of the land of good whiskey, he would have been at no loss to perceive a logical connexion between the two courses of conduct of the commissioners. How on earth can whiskey punch be made unless you have plenty of hot water? And as for the time—hang the time!—who cares to know what o'clock it is while there is abundance of the raw materials for the "flowing bowl?"

Potheen.

ARCHITECT FOR RAMSGATE BURIAL BOARD.

The Burial Board (elected by the town) appointed Mr. Scott, jun., to be their architect, and the appointment was reported to a vestry meeting, and accepted. A meeting of ratepayers has since been held to protest against the appointment, on the ground that there are competent architects in the town, and we are invited to express an opinion on the subject. We are bound to confess that the impression given to us by the reports of proceedings is that the meeting in question was an indecorous affair.

THE SOANE MEDAL OF THE INSTITUTE.

Sir,—Will you kindly allow me to reply to a competitor who asks me to do so through your journal, that the number of drawings deemed sufficient is,—two plans (viz, of the platform and roof), two elevations, one section, one perspective view, and one sheet of details; in all, seven drawings.

It may be presumed that so much of the side elevation as can be contained in the length of a double sheet of elephant drawing-paper will suffice.

John P. Seddon, Hon. Sec. R.I.B.A.

OPENING OF NEW (CONCRETE) SCHOOLS AT CATTISTOCK, DORSET.

The new national school-house at Cattistock which was commenced in April last, and which, says the *Dorset Chronicle*, from whose report we quote, is regarded as a great acquisition to this pretty little village, has been formally opened amidst general rejoicings. The building is constructed of concrete. The design, a Gothic one, was furnished by the late Mr. J. Hicks, of Dorchester; but it has been modified to the plainest form possible. The concrete walls are faced to a comparatively smooth surface, and the quoins, which are cast in separate blocks, are neatly lined out. The building measures from end to end 50 ft. by 52 ft. in width, and comprises a school-room 50 ft. by 18 ft. in the clear, class-room 16 ft. by 14 ft., and a schoolmaster's house containing six rooms, with offices and appurtenances complete. It stands on a pleasant site near the parish church and rectory, the north side of the school-room facing the road. There are entrances by wooden porches at the ends, and a verandah runs around to the schoolmaster's house-door, which is on the south side. The roofs are of slate, with numerous gables over the windows and the pointing ends, and on the centre of the main roof is a small bell-turret surmounted by a gilt vane. The school-room is of a height measuring upwards of 20 ft. from

floor-line to ridge; and is well lighted by four square-headed windows in the north side and a larger four-light window at each end. The open-roof timbers are painted a chocolate colour relieved with blue, the iron ties being also blue; which, with a variety of lamps depending, give an air of simple decoration to the interior. The pure white of the ceilings also contrasts with the sombre grey of the walls, the thickness of which is 12 in. in the school-room and 9 in. in the dwelling. The work has been performed by local contractors,—Messrs. Jones & Wightman, under the superintendence of Mr. Brooking as clerk of the works. The edifice is not yet quite finished. The foundation-stone was laid, on Easter Monday last, by Mrs. Digby, of Chalmington.

The site, which provides for play-grounds adjoining the house, is the gift of the lord of the manor, Mr. G. D. Digby, of Sherborne Castle, who also contributes 350*l.* towards the cost of the building. The total cost of the work, it is said, will be about 1,100*l.* or 1,200*l.* The old building in which the school has hitherto been carried on is pulled down.

NORTH AND SOUTH LONDON.

Sir,—In the discussion of the subject of the proposed new bridge east of London Bridge, I do not see the "East London Railway" alluded to. This will doubtless relieve the traffic, and arrangements might perhaps be made for carts, &c., to be conveyed in the trains through the tunnel. Allow me to take this opportunity of suggesting that the moveable platforms used for access from the river piers on the Thames Embankment to the steamboats should be made double, so as to allow people to go on and off at the same time. A.

MARGATE.

Sir,—The sanitary committee should forthwith procure a return of the number and depth of cesspools contaminating the soil; the number and extent of the wells; the distance between the former and the latter; the number of undrained houses in the town; and the necessity of the drainage being carried say to a mid point between Birchington and Margate, where it could be employed on the marsh lands.

A London Surveyor.

DECAY OF INTERNAL STONEWORK.

Sir,—Will any of your correspondents advise me on the following?—

The best plan of preventing the decay of the internal walls of a church from which the plaster and whitewash of many years have been removed. A large quantity of mouldering stone in the form of dust keeps continually falling, and I should be glad to know of the best mode of preventing it without resorting to plaster.

W. D. Skelton.

*** In such a situation, Ransome's process would probably answer the purpose.

QUANTITY SURVEYORS.

HOUSES, BLACKFRIARS ROAD.

Sir,—In consequence of a remark made in your edition of last week, I feel called upon for a reply, and beg to state that I consider it was perfectly justifiable in this instance to say, "Quantities supplied by Mr. Shrubsole," inasmuch as I did prepare the quantities at my own office, from the drawings handed to me from the architect for that purpose, and the following contractors were furnished with and based their estimates upon my quantities:—

Merritt & Ashby	£1,471	0	0
Taylor & Pitts	1,460	0	0
Warne	1,375	0	0
Crabb & Vaughan	1,370	0	0
W. Smith	1,355	0	0
Gore	1,346	0	0
Nightingale	1,267	0	0
Pitcher	1,253	0	0
Soden	1,228	0	0
Cooke & Green	1,227	0	0
Till	1,209	0	0
A. Smith	1,179	0	0
Hutchinson	1,150	0	0
Shirley & Horne	1,110	0	0
Stone	1,110	0	0
Turner	1,085	0	0
Brown	1,047	0	0

Of course I could not prevent Mr. Cohen, or any other contractor, from tendering without my quantities; and, in my opinion, it was more courteous on my part to furnish you with a complete list of competitors than to have omitted the names of one or two contractors simply because they were not supplied with my quantities.

S. Shrubsole.

*** We do not consider that any person has a right to claim having "supplied the quantities" unless this has been done by direction of the architect, or, with his concurrence, by the joint action of all the contractors. We threatened some time ago to set forth the proceedings of some of the "quantity surveyors," which were very irregular, and postponed the intention simply from unwillingness to damage individuals.

WORK IN THE CITY.

Sir,—A new era has dawned on the City; innovation, in the shape of the Metropolitan Board of Works, has invaded the sacred place, and its ancient authorities have been taught a lesson. Any of your readers who pass the end of the new Mansion House-street cannot help seeing the strong contrast between the work recently done there by the Metropolitan Board of Works and the old rough and ugly style of the Corporation. It is most striking. See where the new work terminates and the old work adjoins. The first with neat arris and close joints to the curb, the paving well squared and neatly finished; the second, rough and ugly, no arris, joints you could lay your finger in, both in the curb and also in the paving. Nor is this confined to the old paving work. Go to the new Viaduct, and I think you will agree with me that a good piece of work is spoiled by the rough and ugly footpaths. Surely the City can pay for having its work well done. Is it that the Corporation, through its officers, still adheres to cobble-stone for its footpaths, although it has banished them from the carriageway? T.

HOW MUCH IS A BUSHEL?

Sir,—Perhaps some intelligent reader of the *Builder* would explain a puzzling difference that occurs in some of our ordinary measures of quantity. The bushel, according to "W. W.'s" letter in last week's number of the *Builder* (concrete proportions), is the 16th part of a cubic yard. A bushel (per table of standard measures) contains 2218·192 cubic inches, and requires twenty-one such measures to make a cubic yard: 21 bushels = 1 cubic yard, according to "Laxton's Price-book."

In an old number of Weale's "Engineer's and Architect's Pocket-Book" I find a table of "measures for various purposes," containing among others, the following:—

A load of lime, 32 bushels,
" sand, 36 "

This table is probably retained in this year's issue of "Weale's," but I have not one.

I humbly submit that it would be most useful to men who have to buy cement, to cheque or *check* builders' and merchants' accounts, &c., to have measures of capacity determined. I dare say you have had similar applications from persons placed as I am at present: your calling attention to the matter will be productive of good in drawing forth perhaps an explanation from those most concerned with such materials. A Building Man.

IMPORTANT TO BUILDERS' CARMEN.

Heley v. Hill & Others.

The defendants, Messrs. Hill, Keddell, & Waldram, well-known builders, were summoned at the Shoreditch County Court on the 11th inst. by the plaintiff, one of their carmen, for a debt of 16s. 8d., alleged to be due from the defendants to the plaintiff for wages. The plaintiff said that he had been employed by the defendants as carman, and as a weekly servant at a salary of £1 per week, and that he was discharged from their service on the first day of the week without any notice, and was, consequently, entitled to a week's wages, less 3s. 4d., which they had paid him for one day's work. The defendants, on the other hand, maintained that the plaintiff was not a weekly servant. They reserved to themselves the right to discharge any of their carmen at any time on payment of a day's wages. At the same time, however, they made it a rule not to do so except in a case like the present, where the plaintiff was discharged for insolence to one of their foremen, and refusing to obey orders. The judge immediately decided in favour of the defendants.

MONUMENTAL.

The Birmingham town council have resolved to erect a statue of Mr. Josiah Mason, the founder of the Erdington Asylum, either in the Orphanage or elsewhere in the borough; and have requested the mayor to ask Mr. Mason's consent to give to the sculptor who may be selected the requisite sittings for the model. It was also resolved that the mayor be requested to lay before the General Purposes Committee Mr. Mason's answer; and, in the event of his consenting to sit for the statue, the committee be instructed to select the artist, and commission him to execute the work in such a way as they may think desirable, and that the committee be instructed to report to the council their opinion as to the best site for the statue and the proper mode for a public inauguration. Some of the members expressed their regret that the working classes would thus be shut out from doing honour to Mr. Mason by subscribing for his statue.

In the Liverpool Town Council Mr. Gladstone recently mentioned that it was proposed to have the following inscription on the statue of the Queen to be erected in front of St. George's Hall:—"Erected in honour of her Majesty Queen Victoria, and as a companion to the memorial statue of the lamented Prince Consort, by the Corporation of Liverpool, 1869. Long live the Queen." The finance committee, he said, had thought it right to take the sense of her Majesty as to what should be inscribed on the pedestal, and it had received her special sanction and approval. He thought it right to observe that cutting and carving granite was an expensive process, but, under the circumstances, it was quite unavoidable; and although the words were more in number than might be desirable, yet they must agree to what was suggested.

The Derby and Mayer statues in St. George's Hall, Liverpool, have been unveiled. They occupy adjoining niches on the east side of the hall. That of Lord Derby is by Theed, and was voted by the corporation in recognition of his lordship's distinguished talent as a statesman, an orator, and a scholar, of his connexion with the county of Lancaster, and of his gift to the town of the collection of natural history known as the Derby Museum. The statue of Mr. Joseph Mayer is by Fontana, and was also voted by the corporation in recognition of a splendid gift to the town, comprising the Fausett Collection of Anglo-Saxon Antiquities, the Pulsky Collection of Ivories, and a fine collection of Egyptian gems, curiosities, &c. Both of the statues are of heroic size, and the cost of each has been about 1,000*l.* The ceremony of unveiling was witnessed by a large concourse of spectators. Mr. Best presided at the grand organ, and during the interval which preceded the entrance of his worship performed a selection of music.

The recumbent effigy of the late Countess of Devon, in Powderham Church, near Exeter, Mr. E. B. Stephens, sculptor, which was shown during last season at the Exhibition of the Royal Academy, is now fixed in the church, as a monument to the memory of the deceased lady. The figure is placed upon a raised stone table in the Courtenay Chapel, on the south side of the chancel. The work and its surroundings, the flooring, the wall-painting, the lighting, the whole setting, so to speak, of this monument is of a costly character. The figure, which is of full length and life-size, is sculptured in pure white Italian marble. It represents her ladyship as she lay in death, awaiting burial. The head is partly covered with lace, imitated by the chisel of the sculptor, and on the shoulders and upon the wrists are shown a collar and wristbands of the same material. The hands lie across each other on the breast, resting upon a cross decorated with flowers. A voluminous white cerement covers the form from the waist to the feet. The tasselled pillow and beaded mattress, like the effigy, are carved in marble. The chapel in which this monument is placed is over the old Courtenay vault (the late Countess was buried in the new vault in the chancel). Everything in this chapel is new, or restored and beautified for the reception of the tombstone, except one of the two coloured memorial windows, which is "In memory of Thomas Peregrine Courtenay, born 1782, died 1841." The window in the south wall is just erected, in memory of the lady upon whose marble effigy the tinted lights fall. It is, like the older one, in the Perpendicular style. The chapel is replete with decorative details. The walls are a study in ecclesiastical decorative painting. The flowers and figures are cheerful, while solemnity and fitness are preserved. On the band under the spring of the roof, quite round the chapel, appear, in large size, the different family arms. In the roof the ribs and the spaces between are specially painted to correspond with the walls, while the large bosses at the intersection of the timbers are gilded. The floor of the chapel is a costly example of artistic paving. Next the skirt of the wall, and round the foot of the monument, run lines of dark Devonshire marble. Then comes a string of white Italian marble. Between these the floor is a mosaic, formed partly of encaustic tiles and partly of Devonshire marbles of various kinds. A line of slabs, however, of ordinary stone runs along the north side of the chapel, on which the ancient inscriptions belonging to the vault are restored. In addition to the effigy and tombstone, Mr. E. B. Stephens laid the floor of this chapel; while the decorations and the new window were done by Messrs. Clayton & Bell, of London. The style of the tomb is of the fourteenth century, and the general decorations are adapted to the same period.

The ship *Queen*, of Swansea, was wrecked in Gull Island, Newfoundland, in December, 1867. The owners, Messrs. Richards & Power, have, as a mark of their sympathy for those who perished, instructed Mr. Philip Rogers, of Swansea, to design and execute an obelisk monument, for the purpose of marking the last resting-place in that desolate island. The obelisk stands 8 ft. high, and is cut out of the forest of Dean stone. The following is the inscription:—On the front view:—"To the memory of the crew and passengers of the ship *Queen*, of Swansea, who were wrecked on Gull Island, December 12, 1867, and there perished. This monument is erected by

the owners of the *Queen*, Messrs. Richards, Power, & Co., of Swansea, Great Britain." Right view: —"Passengers—Felix Dowsley, William Hoskins, Patrick Duggan, Thomas Power, William Kennedy, Grinelda Hopkins, and Caroline Stitson." Left view:—"John Owen, master; Thomas Morgans, mate; and six seamen, names unknown." The block will be shipped shortly for Newfoundland, the place of its destination.

CHURCH-BUILDING NEWS.

Croydon. — The restoration of St. John's Church is now nearly complete. After the destruction of the edifice by fire in 1867, a contract was entered into for rebuilding the church at a cost of 22,000*l*. Mr. Gilbert Scott was the architect, and Messrs. Dove were the builders, by whom the work was undertaken. It was commenced in the latter end of 1867, and the contributions to meet the expense have been most liberal, while for pulpit, altar-rail, font, and other matters, subscriptions have been raised without the slightest difficulty. The building is in the Perpendicular style of architecture. The total length of the nave is 97 ft., and the width is 36 ft. The chancel is 56 ft. 6 in. long, and 30 ft. wide. The tower is 28 ft. square, so that the total length of the church is 123 ft. 6 in., and the total width is 80 ft. 10 in. The height to the ridge from the nave floor is 55 ft., and the western tower is 120 ft. high. The tower is battlemented, and at each angle rises a small embattled octagon tower, surmounted by a crocketed pinnacle. The chancel is divided from the north and south aisles by an arcading of two bays. The detached pillar is in rich polished Devonshire marble. The roof of the chancel is oak panelled, having carved bosses, and the chancel is divided into three bays, the trusses coming down the walls into carved corbels, the intermediate trusses having angels with musical instruments in their hands. The nave is in six bays, with an oak roof. The roofs of the aisles are of deal, all the timbers of which are shown, the trusses coming down into corbels having angels carved upon them in attitudes of devotion. On the trusses under the nave roof are angels holding shields. The church is lined throughout with Godstone stone and blue Corsham intermixed, and the pillars of the arcading are of Ancaster, and the arches of Little Casterton stone. The seating of the church is all oak. A window in the south aisle of the chancel is memorial in character, given by Mr. Blake, and there is another given by Mr. Robinson, both being by Messrs. Lavers, Barraud, & Westlake. The western window is the gift of Mr. R. A. Heath, and it is executed by French artists. The organ is a large and powerful instrument, placed at the end of the north aisle of chancel. It was built by Messrs. Hill & Son. The gas fittings are of brass of a costly character. The pulpit will be of oak on a stone base, but it is not yet erected. The reredos behind the altar is executed by Messrs. Farmer & Bimsley, of Lambeth. It is of alabaster, and in three divisions, the subject on the first being the Nativity, the Crucifixion in the centre, and on the other division is the Ascension. The font is of alabaster, of octagonal shape, having on the four cardinal faces carvings representing the Baptism of Our Lord, the Blessing of Little Children, the Baptism of the Gealer, and of the Centurion. The other faces are filled in with shields and monograms. This font has been subscribed for by ladies. The work has been carried on under Mr. Dove, general foreman for the contractors, while the architect has been represented by Mr. W. Prosser. A movement has been set on foot for having the sittings in the church free.

Eye (*Suffolk*).—The parish church here has been restored and re-opened. Entering by the west door, we find the heavy old outer doors replaced by gates of open work. From the roof of the west entrance the successive coats of paint and whitewash have been cleared away, and the groining which they formerly hid revealed. The entrance is paved with Peake's tiles. The inner door is new, and of oak. The nave is 74 ft. long and 24 ft. wide, while the north and south aisles are about 14 ft. in width, giving a total width of upwards of 50 ft., broken by the plain octagonal columns of the nave. The height of the nave is in proportion to the other dimensions, and the oak roof has been restored, and relaid with new lead. The roof of the nave is a hammer-beam roof, with curved ribs richly moulded. The original design has been preserved in its entirety, the old woodwork being retained, except where it had become decayed. The carved work about the roof, of which there is a profusion, has all been renewed, care being taken that they should be in accordance with those portions of the old work which were remaining. The principal ribs in the nave roof were for the most part sound, but the carving had suffered greatly. In the north aisle a similar plan has been pursued, new oak being substituted for that which was decayed, and all the carving which was deficient replaced, and the roof of the south aisle, which was in a very dilapidated state, has been entirely renewed, the new one being a counterpart of the original. The eastern-most bay of the nave roof differs from the rest of the roof in that it is panelled. It was originally painted, and this ornamentation has been reproduced by Mr. Short, of Eye. In the centre of each panel is the sacred monogram in red letters upon a white ground, surrounded by the crown of thorns in green, there being borders of blue and other colours. Upon the wall above the chancel arch being freed from the whitewash with which it was covered, the remains of a painting of the Doom, some portions of which gave evidence that it was the work of a vigorous hand, were discovered, and Mr. Short made a copy of those portions which remained. In the clearstory of the nave are five three-light windows on each side, all of which have been restored and glazed with cathedral glass, and the tracery of the five windows in the north aisle, and the four in the south, has been renewed where necessary, the west window of the north aisle glazed with cathedral glass, the whole of the stonework cleaned from disfiguring paint and whitewash, and the plain portions of the wall replastered. A gallery in which the organ was placed formerly blocked up the tower arch and concealed the west window, which has four lights; but of this a clean sweep has been made, and the organ, which is still in the hands of the organ builders, will, when finished, be placed in the north chancel aisle. The tower arch is now open, and the west window has been restored. The chamber, which was formerly that in which the ringers stood, has by the opening of the tower arch become open to the church, and, a light stone screen being placed in front, is available as a gallery, the ringers being promoted to a floor above. At present the gallery is approached by a staircase which opens in the church, but it is proposed to make a new staircase in the thickness of the north wall of the tower. For the old pews open benches of uniform character throughout the nave and aisles have been substituted. They are made of wainscot oak, and the ends of the benches have elbow rests carved in a variety of designs, all from nature,—such as ivy leaves and berries, the hazel with its nuts, sea-weed and shells, the hawthorn, ferns, the water avens, and many others. These were designed by the architect, Mr. Colling; and the carving has been executed by Mr. Groom, of Ipswich, by whom also the remainder of the wood and much of the stone carving has been done. Many of the seats are free, and rich and poor are mingled together. The whole expense of the chancel, which has been restored from the designs of Mr. Colling, in a similar manner to the nave, has been borne by Sir Edward Kerrison, and the total cost of the work in this part of the church must have amounted to about 1,000*l*. The clearstory windows of the chancel have been filled with cathedral glass, the work being done by Mr. Neale; and the stonework restored where necessary, and the side arches of the chancel, which were formerly of brick, have been renewed throughout with stone. Various other restorations and improvements have been made. Mr. James K. Colling, of London, was the architect. That gentleman estimated the cost of repairing the roofs at 759*l*., and that of the general restoration and re-seating the nave and aisles at 1,183*l*., but the total cost of the works ultimately determined upon by the committee, irrespective of the chancel, has reached 3,000*l*.

Brantham.—The parish church of Brantham, which has undergone a restoration, has been re-opened. The work has been at the expense of the rector, the Rev. S. R. Carter, the only assistance of any moment that the rev. gentleman has received being from Mr. W. Gurdon, of Brantham Court, who undertook to defray the cost of the new seats. Mr. J. H. Hakewill is the architect. The total expense incurred approaches 3,000*l*. Before the restoration the walls were plastered, the roofs bad, the windows out of repair, the aisle had been pulled down by the parishioners about sixty years before in order that money might be raised by the sale of the lead of the roof! and the building presented anything but an attractive appearance. The rubble walls have been dressed with Bath stone. There formerly was about 8 ft. of height above the string course of the tower, below the belfry windows: this part of the tower was pulled down and it was rebuilt to a height of about 14 ft., and new belfry windows have been put in, and the tower finished with a parapet with circular tracery of Bath stone filled with black flints, while the moulded string-course immediately below the parapet is ornamented with ball flowers, and two new carved gargoyles are placed on the west side. The mullions and tracery of the two-light west windows, as well as the stonework of the outer windows in the tower, have been repaired. The walls of the nave, chancel, aisle, and porch are similar in character to those of the tower, and the roofs, which are entirely new, are of plain tiles. The only old wall to be seen from the outside is the south wall of the nave, in which are three windows, one three-light and the others two-light, the stonework of which has been renewed where necessary. The chancel is entirely new, is considerably larger than that which formerly existed, and is lighted by the east window, and by three windows on the north and one on the south side, all of which have tracery. The aisle is new, and does not cover quite so much space as that pulled down some years ago, the foundations of which were discovered in the course of the work. The relieving arches over the windows have been faced with alternate squares of white Bath stone and black flints, the monotony of the rubble walls being by this means broken, and further relief is given, as far as the aisle is concerned, by the formation of what may be called cross-shaped panels by the stonework of the buttresses, these panels being filled with flint. The nave would appear to have been originally much narrower than it now is, probably hardly wider than the tower itself, but, at some subsequent period, several feet in width were added to the south side, no corresponding addition being made to the north, and the consequence is that the chancel and west arches being in line, the chancel is all on one side of the nave. The roof of the nave is an open wagon-roof, with moulded tie-beams supporting king-posts, these king-posts being, with the exception of the wall-plate, the only portions of the old roof which have been made use of. The columns and arches of the north side are the old ones, which were bricked up in the wall when the former north aisle was destroyed. The architect was not aware of their existence, but when the mean wooden windows which had been put in were taken out, and the brick wall began to be pulled about, the old arches were found, and Mr. Hakewill had them repaired where necessary, and made use of. The benches are of English oak, with wide seats, but the backs are not sloped. The nave, porch, and aisle are paved with Staffordshire tiles; the chancel, which is raised three steps above the level of the nave, with Minton's tiles. On the wall at the back of the font is a painting by Constable—the first public work, it is said, of that artist—representing our Lord rebuking his disciples when they would have prevented children being taken to him. This painting formerly hung over the communion-table. The west window is filled with stained glass, and in one light the subject is the baptism of our Lord, that of the other being John the Baptist in the Wilderness. All the windows in the chancel are filled with stained glass. The east window has five lights. In the centre compartment is the figure of our Saviour, those at the sides being filled with angels, the legend being, "Angels, archangels, all the company of heaven laud and magnify Thy glorious name." The subjects of the south window are the angel meeting the two Marys at the grave of Jesus, and the angel at the Ascension. The subjects of the windows in the north wall are, "Out of Egypt have I called my Son;" "They shall call his name Emmanuel;" the angel appearing to St. Paul; the angel and Cornelius; and St. Philip—"Arise and go toward the south."

Lincoln.—The foundation stone of a new church for the united parishes of St. Peter-in-Eastgate and St. Margaret, has been laid, with Masonic honours, by Major Smyth, D.P.G.M. of Lincolnshire, in the presence of the Bishop of Lincoln, and a large concourse of people. It was determined, under the advice of the architect, Mr. Arthur W. Blomfield, to pull down the old church, and build another and larger church more in the centre of the ground. The new

church will be seated for nearly 500 persons, and will consist of a nave and north aisle, chancel and large vestry, and south and west porches. There will be no tower, but a bell-turret in the west gable. The dimensions are:—length of nave and aisle, 82 ft. 9 in.; ditto chancel, 29 ft.; width of church, 40 ft. 10 in.; ditto chancel, 22 ft.; height from floor to wall-plate, 22 ft.; ditto to ridge of roof, 42 ft. The style of the church is First Pointed, of simple character. The material used for the walling is Lincoln stone rock-faced with dressings of Bath stone, the ashlar of the old church being employed as far as it will go. Bands of red Mansfield stone are introduced at intervals. Internally the walls will be plastered, Bath stone being used for all quoins and arches. The roofs and sittings will be of stained deal. The church will be heated with hot water, an apparatus room being provided beneath the vestry. The contractors are Messrs. Otter & Binns, of Lincoln. The contract for the church, exclusive of one or two items, such as the pulpit and stained glass for the east window, which will be private gifts, is about 2,500*l.* (the amount of the architect's estimate).

Worcester.—The work of restoration in connexion with St. Andrew's Church will, it is calculated, cost about 2,000*l.* Of this sum over 1,100*l.* have been subscribed. It is proposed that the sittings shall be free and unappropriated. A contract has been entered into with Mr. Warner, of Malvern, builder, and he has commenced work.

Kilworth.—The parish church of South Kilworth, Leicestershire, having been almost rebuilt, with the exception of the tower, by Mr. G. F. Bodley, at a cost of about 2,000*l.*, has been re-opened.

St. Bees, near Whitehaven.—The parish church of St. Bees has been re-opened, after various restorations. The communion chancel has been restored by Mr. James Lumb; other gentlemen have restored other portions of the edifice; and a number of memorial windows have been inserted by Messrs. James Lumb; William Lumb; Spedding, of Summergrove; Benn, of Greenbank; Fox and Rigg, of St. Bees; and Harrison, of Linethwaite. The whole of the windows on the north side of the church were put in at the cost of Mr. Benn. At the western end there is a memorial window of the late Captain Sharpe, adjutant of the Cumberland Militia, which has been inserted by the officers of that regiment as a tribute of respect to his memory. The roof is in a very bad condition, and it is to be hoped that ere long the necessary funds will be raised to complete the restorations, which have been going on occasionally for some years.

DISSENTING CHURCH-BUILDING NEWS.

Brixton.—The new Wesleyan chapel, which occupies a prominent site in the Mostyn-road, has been opened for public worship. It is built in the style of Gothic architecture prevalent in the early part of the fourteenth century. It has in the front three entrances, giving access to the ground floor and galleries staircase. At the north-west angle are a tower and spire, the total height being 160 ft. The interior arrangements consist of a nave and aisle, divided by clear-story arches of moulded Bath stone, supported by columns of cast iron, with enriched capitals. There is sculptured foliage distributed over the external surface. The building is adapted to hold 1,100 persons. At present only the chapel is finished, but it is intended to build extensive schoolrooms adjoining the apse end of the present structure. The architects of the building are Messrs. Tarring & Son; contractors, Messrs. Myers & Son; heating arrangements by Mr. Bouling; lighting by Mr. Rothwell; and the decorations by Mr. Sansom.

Ashford (*Kent*).—The new Primitive Methodist chapel here is nearly completed, and has been recently opened. Owing to the adjoining property, the light is obtained from the back and front principally by large wheel windows in the gables. The building may be said to be in a Single Pointed style, with medium pitched roof. The architect was Mr. John R. Collett, and the builder Mr. James Clifford.

Stoke-upon-Trent.—The Baptist chapel in the London-road has been re-opened for public worship, after having undergone a renovation and improvement. The old square pews have been removed, and modern open benches have been substituted in their places. The new Sunday schools, class and lecture-rooms adjoining, which have been erected during the past four months, about to be opened, are built of red and blue bricks, with moulded brick dressings. The whole of the chapel and school works have been carried out by Mr. Nathan Barlow, contractor, from the designs and under the superintendence of Mr. Edwin Penn, architect, at a cost of 650*l.*

Swansea.—The memorial stone of a new Baptist chapel at Morriston has been laid. The new chapel is to be one of the largest in the Principality. It measures 74 ft. long, by 49 ft. 6 in. wide, and will contain sittings for 1,280 people. The edifice is to be built in the Tuscan style of architecture. The architect is the Rev. H. Thomas, Ystradgynlais. The contractors are Messrs. Jones, Evans, & Jones, Clydach. The estimated cost of the chapel is 2,140*l.*; and when it will be opened the old chapel will be converted into three vestry-rooms, &c., at the cost of about 500*l.* It is estimated that the new buildings altogether, when completed, will cost 2,800*l.*

Leighton Buzzard.—The chief stone of a new Primitive Methodist Chapel has been laid here. The edifice, which is being erected on the site of the old one by Mr. Dawson, of Leighton, is to accommodate about 800 persons, and its dimensions will be 60 ft. by 40 ft., with a height in the interior of 25 ft. The external design is to be Italian, the front elevation being plastered with Roman cement; there will be four pilasters in front, and two on each side—of cement. Two schoolrooms, over each other, will also be built for "the children of the industrial classes." The total cost of the buildings will be about 750*l.*

Nottingham.—The memorial stone of a new Presbyterian Church of St. Andrew, of Belgrave-square, Goldsmith-street, has been laid. The edifice, when completed, will comprise a nave, 50 ft. by 30 ft., with circular bays or aisles on either side, and a gallery at one end, extending over a vestibule in connexion with north and south porches, in which are stone staircases communicating with the gallery. Over the south porch are carried the tower and spire, 120 ft. high. The style of architecture adopted is Early Decorated; and the walls will be built of Bulwell stone, with dressings and window tracery of Ancaster stone. The interior of the church will be generally of a plain and unpretending character, and the open benches so placed that every one can see the minister, each bench being slightly raised above the one in front, and fixed circular on plan. The pulpit and fittings connected therewith will be placed against the western wall. The nave will have a wagon-headed boarded roof, supported by carved principals. There will be seat accommodations for upwards of 600 adults. On the western portion of the site will be a lecture-room, 48 ft. by 25 ft., with sessions-room or vestry, and other offices, communicating with Vickers-street, all in character with the church they adjoin. The architect is Mr. Robert Evans, of Nottingham; contractors, Messrs. R. Dennett & Co.; clerk of the works, Mr. Robert Speed. The cost will be about 4,000*l.*

Yardley Hastings (*Northampton*).—The Congregational Chapel at Yardley Hastings has been reopened for Divine worship, after a restoration and renovation. With the exception of the galleries, the whole inside of the chapel has been taken out, a new floor has been laid down, new pews of deal, varnished, have been put in, with a large pulpit, of the same material. The chapel is lighted with paraffine-lamps, placed on pillars. The work has been carried out by Mr. John Watkin, of Northampton, from the plans, and under the superintendence of Mr. Sharman, of Wellingborough, architect. The cost is about 400*l.*, the greater part of which has been raised. Schools are attached to the chapel. The chapel has been painted throughout, the walls, ceiling, and pillars being of a French grey colour, relieved with white cornices, and some bright colouring.

Fenton.—The memorial-stone of the new Mount Tabor (Methodist New Connexion) Chapel, the erection of which has recently been commenced at Fenton, has been laid. The new edifice will occupy the site of the old chapel, with the addition of ground at the rear, from which some old houses have been removed. It will be in the Gothic style of architecture, according to examples in France and Germany of the thirteenth and fourteenth centuries. The total length, exclusive of the entrance, will be 55 ft. 6 in., the width 40 ft. 3 in.; the height from ground line to ridge 51 ft. The front gable, facing Market-street, will contain the principal entrance, and will have three wide doorways with moulded arches, and stone labels with carved terminals, supported by circular stone shafts, with circular moulded bases, bands, and carved caps, the whole surmounted by a large five-light stone window with tracery in the head. The gable will be covered with stone, having moulded corbels, crockets, and finial. To the right and left of the entrance are to be staircases leading to the galleries and orchestra, the right staircase being surmounted with a tall, slated, spirelet roof, and the left staircase surmounted by a tower with buttressed angles and spire, the total height of which is to be 110 ft. to the top of the metal finial with which it is to be crowned. There will be two-light windows on each face, the angles being surmounted by pinnacles 10 ft. high from the base to the apex. The minister's vestry will be near the entrance, and the other vestries at the further end of the chapel, with the heating-chamber below. The walls are of brick, plastered internally; and the front faced, externally, with stocks, relieved with Hollington stone dressings, moulded, carved, and traceried work. The bays are to be marked in the side walls, by buttresses, between the windows. The roofs are to be open, carried by framed principals with curved trusses filled in with cut and perforated boarding, supported by moulded stone corbels, and to be stained and varnished. The opening to the orchestra from the chapel is to be 15 ft. between the piers, and the height from the floor to the apex of the arch 43 ft.; the arch being supported by moulded stone corbels, and finished round with plastered archivolts. There will be a gallery round two sides and one end, with a circular enriched and moulded front. The chapel will be lighted at the sides by two-light pointed and curved windows, and at the end by a five-light stone traceried window, the latter being filled with coloured glass. The entrance floor will be laid with tiles to a pattern. The benches and fittings throughout are to be of deal, stained and varnished. The buildings will be warmed by means of hot air. At the entrance to the chapel from Market-street will be sliding wrought-iron ornamental gates, and the space in front will be enclosed by a wall surmounted by stone and metal work. The school, which is to be at the further end of the chapel, will be two stories high, the entrances to which are from Park-street. The total length is 56 ft. 6 in., and the width 35 ft. 6 in. The rooms are to be divided into departments for boys and girls, with separate entrances, in which are to be a number of class-rooms. The room may be used as a lecture-hall, or for public meetings. The chapel, it is calculated, will accommodate between 800 and 900, and the schools will be sufficiently large for nearly that number of children. The estimated cost of the building is 2,440*l.*, exclusive of the old materials. The architect is Mr. H. Pinchbeck, of Manchester, under whose supervision the work will be carried out; and the contractors are Messrs. Wade, Brothers, also of Manchester.

Stourport.—The memorial-stone of a new Congregational Church has been laid here. The architect is Mr. Bidlake, of Wolverhampton; and the builder Mr. Nelson, of Dudley. The total cost is estimated at about 1,400*l.*, towards which some 700*l.* or 800*l.* have been promised.

SCHOOL-BUILDING NEWS.

Elmley Castle.—New schools, which have been erected in this village, through the generosity of Lady Pakington, have been opened by the bishop of the diocese, the ceremony being combined with the harvest-home celebration for the parish. The school which has hitherto existed afforded accommodation for only thirty or forty scholars, and was in many ways inconvenient. The new building will accommodate about eighty scholars, and will be used as a day and Sunday school. The cost will be about 500*l.*, and would have been about 70*l.* more had not the farmers of the village undertaken the carting of the material free of charge.

Middlesbrough.—The National Schools for the parish of St. Hilda, Middlesbrough, which have been erected by Mr. Bolckow, M.P., on ground granted by Messrs. Hopkins, Gilkes, & Co., situated in West-street, have been opened by the Duke of Devonshire. The new schools cost 6,000*l.*, exclusive of the land, and will accommodate 900 boys, girls, and infants.

Abingdon.—New National Schools have been opened here. The building is of brick, and has

been erected at a cost of 1,250*l*. There are two school-rooms, 65 ft. by 20 ft., with class-rooms, &c., attached, the whole to accommodate 500 children. The builder was Mr. W. Bowler, who worked from the designs, and under the superintendence, of Mr. Edwin Dolby, of Abingdon, architect.

Kessingland.—New school rooms have been opened here. They are built of red bricks, with white and black bands, and headers, and stone dressings. In addition to the large room for boys and girls, there are also an infants' room and class-room, with playground. Mr. J. Pearce, of Norwich, was the architect. The contract has been carried out by Mr. Samuel Hall. The total cost, including the purchase, is nearly 800*l*

Books Received.

The *Academy* is the (not very good) title of a new monthly record of literature, learning, science, and art, issued by Mr. Murray. The articles are signed,—a practice we venture to guess will not last long,—and in this first number show the co-operation of a large number of very eminent men, so large, indeed, that to get them in, the contribution of each is so small as to be of comparatively little worth. In future numbers, however, another course will doubtless be pursued, and we may expect a valuable addition to periodical literature. The contents of the journals relating to the various departments are given with lists of selected articles—a capital feature. The present number is distinguished by a letter from Lord Byron, hitherto unprinted, which would tend strongly to refute the infamous statement made by Mrs. Stowe, if refutation were not now unnecessary. There is also a letter from Mr. Murray as to the destruction of Byron's Autobiography.——"Palestine Exploration Fund: Quarterly Statement, No. 3, July 1st to September 30th, 1869. Office, 9, Pall-mall East, S.W." These explorations are still making way, though with imminent risk of coming to a premature close from want of funds. And were it so, no future accession of means might enable us to recommence or go on with the excavations. The present statement contains various papers of more or less interest, besides Lieut. Warren's letters; such as one by Captain Wilson, R.E., "On Remains of Tombs in Palestine," and part of Lieutenant Warren's paper "On Mounts Zion and Moriah," which appeared in the *Athenæum*. There is also "The Quarterly Statement of Progress." More masons' marks have been found in such a position as to show that they must have been made before the stones were laid. They have been pronounced to be Phœnician letters. "A most curious chamber or passage" has been discovered, which, it is suggested, may have served as an overflow for the Birket Israil. An engraving of this chamber has appeared in the *Illustrated News*.——"G. W. Jones's Plan of Universal Penny Railways, by the application of Turnpikes to Railways. Davies & Co., Cornhill." We have already noticed the proposal for penny railways, which is ably advocated in this pamphlet, with strong arguments in its favour. The Commissioners on Railways reported that the cost under the present system of working a passenger train of 7 carriages, with 500 passengers, is about 2*s*. a mile, or 1*l*. 12*s*. for 16 miles. Taking the present average of first, second, and third class passengers in such a train, here is how Mr. Jones puts it on his *penny turnpike* system:—

Turnpike to Turnpike, 16 miles.

62 passengers, at 1d. each	£0	5	2
27 ,, 3d. ,,	0	6	9
11 ,, 6d. ,,	0	5	6
	0	17	5
			5
Toll, 500 passengers	4	7	1
Cost of train, 16 miles, at 2*s*. per mile	1	12	0
Profit (172 per cent. !)	£2	15	1

——"An Outline of the American School System. By Jesse Collings. *Birmingham Journal* Printing Offices, New-street." The description of the American Common School System contained in this pamphlet is derived from the Report of the Rev. J. Fraser, M.A., Assistant Commissioner, who was sent to America to inquire into the method of education which prevails there. Mr. Collings also considers the subject of the establishment of common schools in England.——"The Organist's Quarterly Journal of Original Compositions. Edited by William Sparks, Mus. Doc. Part IV., Vol. 1. London: Novello, Ewer, & Co." The musical journals speak well of this periodical, the editor of which is the well-known organist of the Leeds Town-hall.

Miscellanea.

ART.

THUS Art is Inspiration and Design,
Thought's greatest, grandest, pure embodiment,
Ideal pictures in the mind forecast,
Assuming shapes through subtle artist skill,
To live for aye on canvas and in stone.
The Painter, Sculptor, Architect, may die,
But Art, the virgin offspring of the mind,
Immortal as their souls, will ever live,
And all their mighty and majestic works,
The myriad children of their fertile brain,
Through countless generations will endure
And shine as monuments of Art and them.

C. H.

Architectural and Archæological Society of Durham and Northumberland.—The last general meeting for the present year of the members of this society has been held at Haughton and Chipchase Castles, and the excursion proved one of the most interesting and enjoyable of the season. The members met in strong force at Barrasford Station, on the North British Railway. The following gentlemen were elected new members:—The Rev. T. J. Walton, Herts; Mr. R. N. Robson, Durham; Mr. Henry Lipscomb, Staindrop; and Captain Monks, Durham. At the station, the president of the association, the Rev. W. Greenwell, of Durham, made a few remarks, stating that at that meeting no papers would be read, but Mr. W. H. D. Longstaffe would give them short descriptions of the castles they were about to visit. From Barrasford the party proceeded to Haughton Castle, which retains a considerable portion of the ancient structure. Here Mr. Longstaffe gave a sketch of the history of the structure, and afterwards the members went through the extensive establishment. After partaking of refreshments, the excursionists walked to Chipchase Castle, the seat of Mr. Hugh Taylor. They were received by Mr. Taylor, jun., and Mr. Hall showed them through the premises. Mr. Longstaffe gave a brief history of this castle also, and the visitors were entertained by Mr. Taylor. Shortly before eight o'clock the party took train at Wark Station, and returned to Newcastle.

Industrial Co-operation.—A number of working men, at Liverpool, have formed themselves into a limited company, called the Industrial Building and Co-operative Company, and they have just finished the erection of a pile of buildings for the new iron works of Messrs. Clay, Inman, & Co., near Birkenhead. These works were recently visited and examined by Lord Stanley, and their completion was celebrated by a public dinner in Liverpool, at which his lordship was also present; Mr. O'Dowd, joiner, and chairman of the Industrial Building Company, presiding. This dinner took place in the Operative Trades Hall, which has also been started by the working classes, and consists of a suite of rooms, rented in Dale-street by a company, and intended to be used chiefly as a meeting-house for the various local trade-unions. A news-room, lectures, and the usual accompaniments of a literary institution will be connected with the hall. The printers, who possess an excellent library, have placed it in the hall. Shares are held by members of the principal trade-unions, and the first president is Mr. James Samuelson, editor of the *Quarterly Journal of Science*. After the dinner, the guests adjourned to the Concert-hall, in Lord Nelson-street, where Lord Stanley delivered the inaugural address, in which his lordship spoke some wholesome truths as to holding trade meetings in public-houses; as to the diminution of demand caused by increase of cost, whether in coats, houses, or anything else; and as to the rights of labour on the part of the non-unionist no less than the unionist. His lordship also spoke much in favour of industrial co-operation as a hopeful feature in the trades movement.

The Masonic Hall, Haverfordwest.—We are asked to add to our previous mention of this Masonic Hall about to be built, that the architects engaged upon it are Messrs. Irlumper and Aldwinckle,—names of such unusual form that both the partners will find it wise to acquire the habit of writing them clearly.

New Music-Hall for Sheffield.—The plans of a new music-hall for Barker-pool are completed. The building, the architects of which are Messrs. Flockton & Abbott, is in the Italian style of architecture. It will be exteriorly a comparatively plain and unpretentious building. The large hall will be 120 ft. in length by 60 ft. wide. At the top there will be an organ, and the orchestra and platform will accommodate about 250 performers. Chairs will be placed in the body of the hall sufficient to accommodate about 1,200 persons. At the extreme end there will be a gallery. A balcony, somewhat in the shape of a horse-shoe, will go three parts round the room, and at the back of a portion of it there will be another gallery. It is believed that the hall will be able to comfortably accommodate about 2,500 persons. In case of fire or sudden alarm there are several means of exit. Underneath the large hall, and therefore on the ground floor, there is a smaller hall, 60 ft. by 40 ft., which can be used for public meetings, rehearsals, or small concerts; and on the same floor there will be first and second class refreshment-rooms and a room sufficiently large to be used as a dining-hall. On the basement there will be a kitchen. The estimated cost of the building is 12,000*l*. The sum which the company has paid for the land on which the structure will be erected is 4,000*l*., and it is believed that the organ and the internal fittings of the hall will cost about 4,000*l*. more. Shares to the amount of 10,000*l*. have been taken up, but it is believed the company will not commence to build until some more capital has been subscribed.

Four-side Moulding Machine.—A moulding machine, on which every variety of moulding,—from the largest and most complicated, down to the smallest,—can, it is said, be made with the greatest rapidity and accuracy, is illustrated by an engraving and details in the *American Gaslight Journal*. The upper cylinder or cutter-head, slotted on four sides, is 10 in. to 14 in. long, of the best gun metal, on a 1¾ in. cast-steel arbour driven at both ends by 4½ in. diameter, 5 in. face pulleys. A few of the many kinds of work this machine is said to be capable of doing are,—Double surfacing and matching to 10 in., planing and matching staves, planing siding, sticking stair rail, or moulding from 10 in. by 5 in. down to the smallest. It will work a single moulding on four sides, and cut out a square angular corner-piece, saving a strip of lumber large enough to make a moulding. It will also work two lines of mouldings, one of which can be separated by the saw as they are made, thereby finishing three lines of mouldings at the same time, and will work all three on four sides at the same operation, each one of which will be finished as well as any machine will finish a single moulding. It is capable of working 50,000 ft. of moulding per day. The tight and loose pulleys are 12 in. in diameter, 6 in. face, and should make 900 revolutions per minute, giving heads 4,000. Weight without box, 3,350 lb. Particulars can be had on application to C. B. Rogers & Co., 109, Liberty-street, New York.

Working Men's College.—The lectures arranged for the session 1869-70, run thus:—"Why Law ought to be studied in a Working Men's College," by Professor Sheldon Amos, M.A.; "The Study of Language," by Mr. J. W. Hales, M.A.; "The Rosse Telescope," by Mr. J. H. Lamprey; "Tragedy," (introductory to a course of lectures on the tragedies of Shakspeare, to be delivered in the Second Term) by Rev. Ll. D. Bevan, LL B.; "The Business of the House of Commons," and "The Officers of the House of Commons," by Mr. Reginald F. D. Palgrave. 2nd Term—"Sir John Falstaff," by Rev. Ll. D. Bevan; "The Relations of Geography and History with special reference to England," by Mr. C. H. Pearson, M.A.; and "Thomasin, a Writer of the Thirteenth Century," by Mr. Eugene Oswald.

State of Falmouth.—We are glad to hear that the joint Sewerage Board for the town and parish has determined to commence to drain the district at once. At a meeting of the Board on Tuesday evening the plans and reports received from Mr. Ellis, C.E., were fully discussed, and the system recommended by that gentleman was unanimously adopted. Mr. Ellis was appointed the engineer, and the plans were ordered to be forwarded to the Local Government Act Office, London, for approval. This affords a good comment on some of the objectors to remarks recently made in our pages.

More Complaints as to the Metropolitan Underground Railway. — The *Kensington News* writes a leading article complaining of the great want of accommodation for third-class passengers on the Metropolitan and District railways:—

"For two hours at evening daily," he remarks, "saving Sunday and Saturday, and on the latter day for five hours, may be witnessed a scene that is without parallel in the civilised world. . . . . The company does not recognise any rights but its own. The tenure of a seat for the journey is not, in the company's view, rented or purchased by the traveller. The company wants money, and to get it breaks the law, and breaks faith too, by allowing sixteen, twenty, and even in one instance *twenty-six* persons to occupy the space of ten. The extreme case we heard complained of by workmen themselves, who protested afterwards that they could not breathe the hot, fœtid, deadly air in the compartment."

Correspondents of our own make other complaints as to the way things are managed on the Metropolitan. One, who went from King's Cross Station to South Kensington, not knowing the price of a third-class return-ticket, which is sixpence, laid down two sixpences at the wicket, which betrayed his ignorance to the check-giver, and received threepence change, which, as he afterwards discovered, was thievery to the extent of threepence. Another asked for a ticket for *Chelsea* at the Portland-road station of the *Metropolitan, which has only one station in Chelsea*, namely, the station at *Sloane-square*. On reaching their Chelsea station, full fare was re-demanded from him, on the ground that the ticket was not given for the Chelsea station of the Metropolitan, which issued the ticket, but of another company, a mile or more away from the Chelsea station of the Metropolitan. Passengers, to escape such thimble-rigging jugglery, and prevent the Metropolitan Company from thus reaping double fares, must take care not to say to the ticket-clerk of the *Metropolitan* that they want a ticket on their line for *Chelsea*, but for *Sloane-square*, where their only Chelsea station happens to be!

The Brighton Drainage. — The Town Council, by a vote of 22 to 20, have rejected the recommendation of the General Purposes Committee to cause immediate steps to be taken for obtaining an Act of Parliament to carry out Mr. Hawkshaw's plan for the construction of an intercepting sewer from Cliftonville to Portobello. An element of doubt is as to the ventilation of the seven-mile sewer. In his original report, Mr. Hawkshaw spoke of "ventilating shafts, which could be so arranged as to be unobjectionable," but did not specify the character of them. In a subsequent interview with the General Purposes Committee, he seems to have been questioned on this point, and it was then ascertained, as we have already stated, that his plan for ventilating this seven-mile sewer, with a fall of 3 ft. per mile, was by a line of gratings, running at intervals of 200 or 300 yards in front of the marine promenades. Mr. Hawkshaw was, it seems, requested by the Committee to put his views upon this matter of ventilating in writing, and this he has done in a supplementary report, made public on Monday in last week, in which the plan of ventilation by gratings "along the margin of the sea" (to adopt Mr. Hawkshaw's own expression), was strongly urged, "because," says Mr. Hawkshaw, "in my opinion, no more serious mistake can be made, and none more likely to be attended with bad results, than to neglect such precaution."

New Process of Refining Iron.—Mr. Palmer Budd's new process of refining iron was shown, in the works of Messrs. Bolckow & Vaughan, to the members of the National Iron and Steel Institute, after their meeting at Middlesbrough. It appears that a patent has been taken out by Mr. Budd for the invention of such "improvements in the manufacture of iron and steel" as shall henceforth render the process of puddling much quicker and easier. This valuable result is said to be accomplished by the subjecting of molten cast-iron to the action of soda and soft hematite iron ore—or other oxide of iron—previous to its being subjected to the puddling process. It was alleged by the patentee that the puddlers much prefer the iron in this condition, as it lessens and helps their work, and also that it will tend materially to cheapen the process of manufacture. In his opinion, the money value of the invention to the iron trade will be enormous; greater, perhaps, than that arising from the use of blast-furnace gases, said to be 1,000,000*l.* a year, and which Mr. Budd first introduced into this country, and made known to the iron trade at the meeting of the British Association held at Swansea in 1849.

Workhouse Bakehouses. — The Poor-law Guardians of the hamlet of Mile-end Old Town, have recently been engaged in frequent discussions as to the advisability of establishing a bakery in connexion with their workhouse, in Bancroft-road, for supplying the in- and out-door poor with bread. A committee of the Board was appointed to privately discuss the benefit likely to result from the adoption of the scheme, and at a meeting of the Board, held on the 7th inst., a report was presented by this committee, recommending that the proposal be adopted, and stating that "we have obtained from Mr. W. Dobson, architect, a plan showing the proposed alteration, and the cost of the same. The erection of the bakehouse, oven, flour-store, and chimney-shaft, were estimated by Mr. Dobson to cost 460*l.*; and the erection of two 12-bushel ovens, to cost about 120*l.*, making a total of 580*l.* Should the Board decide on adopting this our recommendation, we further recommend that one of Stevens's hand-power bread-baking machines be obtained, at a cost of from 25*l.* to 50*l.*" Some opposition was offered, on the ground that the adoption of the scheme would seriously injure the tradesmen of the hamlet, but eventually the report was carried, and advertisements ordered to be issued, inviting tenders for carrying out the works.

The Bath Water-Supply.—The insufficiency of the present water-supply was well illustrated by Mr. Bright, in a recent debate in the town council, reported in the local *Chronicle*. The past few weeks have not been remarkably dry, yet it would seem that during that time certain of the inhabitants of Southgate-street have been on such short commons of water, that they have had only two days' supply each week, and Mr. Bright, who stated this, added that had it not been for a pump in the Full Moon-yard, to which they were allowed to resort, they would often have been absolutely without any water. Mr. Lewis capped the statement with the remark that the pump, which thus supplied their pressing wants, stands in a stable yard, near the river. Mr. Bateman's report fully bears out all that has been said on the insufficiency of the existing water-supply. He lays it down that an adequate provision of water would give from 25 to 30 gallons a head per day to the population, and remarks that the corporation can afford no more than 14½ gallons, while the smaller private companies dole out something less than 2 gallons daily per head to their customers. It would seem that the corporation are deriving an income of 2,300*l.* less the interest of 4,000*l.* (say 200*l.*), from their water-works, or something like 9 per cent.

A New Opening for Labour.—There is a good opening for any capitalist or philanthropist who would endow London with street porters after the pattern of the German *dienstmann*. The commissionnaires are efficient, but they are scarcely numerous enough; and, besides, they do not perform one of the chief functions of the *dienstmann*, which is to carry large parcels, boxes, or portmanteaus. For many years Edinburgh has been provided with such porters, who stand (or at least used to stand) at street corners or other stations, with belts or ropes over their shoulder, ready to carry trunks, &c., as well as parcels, or to run messages or carry letters, at any one's orders. It is one of the petty discomforts of London, on the contrary, that when a person wants to have a tolerably-sized box carried he does not know by whom to send it. If a brigade of street porters,—with belts, as at Edinburgh, or light barrows, as at Margate,—were established, having stations scattered about the different parts of London like cab-stands, as the *Pall Mall Gazette* suggests, it would render a real service, and there is no doubt it could be made to pay.

Acidulated Non-inflammable Wood.—In a letter to us, signed "R. Taylor," sulphurous acid is suggested as a means of rendering wood inflammable. A small splinter of fir wood was inclosed, which we find ceases to flame the moment it is taken out of a gaslight, although it materially increases the volume of the gas flame while burning, as it does, in it. The acid, our correspondent says, is diluted with ten parts of water before steeping the wood in it, and floor-planks, he adds, require but a few minutes' immersion.

The Surveyor of St. Luke's.—The salary of Mr. Niblett has been increased from 250*l.* to 300*l.* by the vestry. An amendment that a gratuity of 50*l.* be voted instead was rejected.

Wolverhampton Free Library and Reading Room.—The inauguration of this new Free Library has just taken place. It has been started and will be carried on under the Free Libraries Act, which was adopted at a unanimous public meeting held some months ago. The building in which the institution is located was formerly and for many years used as a Mechanics' Institution and Athenæum, in Queen-street. It has been cleaned, repainted inside and out, and refitted. There is an upper room which will be used for the library, and a lower room which has been furnished for readers. There are also smaller rooms that may be used, if necessary, for reading or writing, and out-offices. The Athenæum committee have transferred to the new institution upwards of 2,000 volumes of books to form the nucleus of a library: some effects, and a number of shares in the building, and gifts of books had also been received.

The Penzance Borough Surveyorship.—There were 78 applicants from all parts of England for this office, and the special committee recommended that the following four gentlemen be invited to attend, receiving 5*l.* each for travelling expenses:—Alfred Morris, aged 27, surveyor to Rusholme Local Board of Health; Clement Clitheroe, 25, assistant-surveyor to Local Board, Kingston-upon-Hull; George Livingstone, 26, assistant-surveyor of Preston; and John Hume, 27, assistant-surveyor to Derby Corporation and Local Board. To this an amendment was proposed that the name of Mr. Thomas Carne, builder, of Penzance, be added to the list; but, on a division, ten opposed the eight who supported the amendment, and it was lost. The duties of the new surveyor were then defined in writing and agreed to; and at an adjourned meeting of the town council and local board, Mr. Alfred Morris was elected as borough surveyor, the services of Mr. John Matthews being retained as consulting engineer.

Big Ben's Inscription.—A writer in *Notes and Queries* points out an objection to the inscription under the face of the great clock of the Houses of Parliament. It is as follows:—"Domine salvam fac reginam nostram Victoriam *primam*." He says, the glaring absurdity of *primam* will perhaps more clearly appear when I tell you that a near relation of my own was once acute enough to discover (as a solicitor) that a deed had been forged by its beginning, "This Indenture made the —— day of —— in the —— year of our sovereign lord King Charles *the First*," &c. Until there has been a second Queen Victoria why need we speak of the first? This is not the first time that the error of calling her Majesty Victoria the First has been pointed out. Who knows but that she may be Victoria the last, or the only Victoria of her class?

"Drunken Blackburn." — The vicar of Blackburn, in the course of a speech made the other day in that town, after showing that Blackburn stands A 1 as a drunken town, made a suggestion, according to the *Rock*, which is worth repeating. "If people will drink," said he, "it is far better for them to go and drink together, than that the rest of the town should suffer. There ought to be a 'Drunkards' Quarter,' if there ought to be any drunkards at all. You have often heard and seen in towns—in most large towns—that there are shambles where the butchers' meat is to be sold—they do not allow it to be sold in other parts of the town;—and in Blackburn it would be far better if we had a kind of 'Drunkard's Shambles,' say at the top of Brandy House Brow, a very proper locality in which to drink: let them go up to the top of the hill to drink."

A Covered Market for York.—The question of a covered market for York, which has for some time past excited great interest, has been brought before the corporation for discussion. A special committee, appointed a few months ago, had reported in favour of what is called the Davygate site, the cost of which was estimated at about 30,000*l.* A number of petitions, signed by 3,097 of the ratepayers, against the scheme, were presented, and only one petition in its favour. The adoption of the report was moved, and an amendment to refer it back to the committee was rejected by a majority of 22 to 17. The original motion was therefore carried. The town clerk was authorised to take the requisite steps for applying to Parliament for an Act to empower the council to erect the market.

Worcester Cathedral.—A screen is now in the course of erection on the north side of the sacrarium or chancel of this cathedral. It is the gift of Mr. J. D. Allcroft, and will probably cost upwards of 600*l*. Messrs. Barber & Brindley, of London, who executed the reredos for the dean, are also constructing the screen, which consists of open arcade work in the Early English style, decorated with carved foliage, finials, &c., and standing on a basement, the face of which is covered with diaper work. The material employed is Caen stone, with Purbeck marble for the shafts. Mr. Scott designed the screen, which is intended to harmonise with the reredos, and the architecture of the east end generally. In the cathedral yard a clearance has at length been made of the building materials, which for the last ten or twelve years have disfigured the spot.

Convalescent Home for the Jewish Poor. A convalescent home for the Jewish poor, erected as a memorial of the late Judith, Lady Montefiore, has been consecrated. Poor Jews are, by their strict dietary laws, precluded from availing themselves of the benefits of existing kindred institutions for the recovery of health. The home, now ready, is situate near the Norwood Junction Railway Station. It comprises two semi-detached villas, one being designed for the accommodation of male and the other for female patients. The appearance of the home is neat and cheerful. Attached is a pleasant garden for the recreation of the patients. The interior of the home is furnished with every possible consideration for the comforts of the inmates.

Wrought-iron Gates, Paxhill.—A handsome pair of wrought-iron carriage-gates, with side-pieces, have been manufactured and set up for Mr. P. Northall Laurie, at his residence, Paxhill Park, near Hayward's Heath, Sussex, by Mr. J. Winstanley, metal worker. The gates are full of foliage, the design of which is in parts a little wanting in simplicity, freely worked by hand, and include two lamps. Judging from a photograph before us, the whole is a very creditable piece of metal-work. We mention these gates with the more satisfaction because Mr. Winstanley was a prize gainer on several occasions in the Society of Arts' art-workmen's competitions.

Works on Pageantry.—The late Mr. Fairholt bequeathed to the Society of Antiquaries the whole of his collection of books and prints on Pageantry. These form 179 volumes, and by the able care of Mr. C. Knight Watson, the secretary of the society, a catalogue has been prepared and issued to the members. Poor Fairholt's thoughtful act has put the Society of Antiquaries in possession of the nucleus of what, with the aid of other members, will doubtless become a special library of much interest.

New Military Prison, Aldershott.—A meeting of builders was held at the War Office, Pall-mall, on Tuesday last, for the purpose of appointing a surveyor to take out the quantities for the above work, to act in conjunction with the surveyor for the War Department. Messrs. Strudwick & Mennil, of Parliament-street, and Messrs. Pain & Clark, of Buckingham-street, Strand, were the surveyors nominated, and the election was decided in favour of the first-named gentlemen by a large majority.

An Epitaph from Salsburg.—A travelling friend, with an eye for the good, sojourning for a short time in charming Salsburg, one of the loveliest places in the creation, sends us from the cemetery there an epitaph in Greek, which may be thus Englished: — "Everything remains: annihilation is impossible: even decay is but a course of transition to a new form of being:"—a pithy and pregnant sentence.

Saving "Windfall" Fruit.—A correspondent suggests that thick but soft material, such as felt cloth, water-proofed, might be laid under fruit-trees when the fruit begins to fall from it; and thinks the cost would in time be repaid by the saving. Of this, however, there may be some doubt. Would not light and cheap network, hung from the branches, be preferable?

Dudley Gallery.—The Annual Exhibition of Cabinet pictures in oil at the Egyptian Hall, will be opened on Monday, the private view taking place this week.

St. James's Tower, Taunton.—A vestry meeting has lately been held to take steps to restore this tower; but, in consequence of the small attendance, the meeting was adjourned.

TENDERS.

For draining ten houses at Rich-terrace, West Brompton. Mr. H. L. Grantham, architect:—

Whittick	£210 0 0
Shelton	188 10 0
Thorowgood	150 0 0
Wigmore	150 0 0
Jackson	145 0 0
Baker	142 10 0
Turrell, Bros.	125 0 0
Ramsden (accepted)	105 10 0

For rebuilding No. 3, Wardens'-court, Clerkenwell, for Mr. T. J. Parker. Messrs. W. Waymouth & Son, architects. Quantities supplied:—

Dove, Bros.	£625 0 0
Perry	620 0 0
Foster	570 0 0
Colls & Sons	570 0 0
Chessum	545 0 0
Cooke & Co.	530 0 0
Merritt & Ashby	497 0 0
Preedy & Son (accepted)	459 0 0

For building wall, &c., round proposed addition to Burial Ground, Westbury-on-Severn, Gloucestershire:—

Coleman & Son	£266 0 0
Meredith	228 0 0
Rice	220 0 0
Griffiths	200 0 0
Howe	175 0 0
Bevan (accepted)	120 0 0

For master's residence for Hele's School, at Plympton St. Maurice. Mr. H. Elliott, architect:—

Radcliffe & Crocker	£1,781 0 0
Clarke	1,749 0 0
Hellings & Hunt	1,731 0 0
Jenkins	1,715 0 0
Stevenson & Son	1,707 0 0
Blowey	1,700 0 0
Brimblecombe & Rowse	1,674 0 0
Price	1,659 0 0
Saunders, Bros.	1,624 0 0
Call & Pethick	1,578 0 0
Dingle	1,367 0 0

For erecting two residences at Plaistow, Essex, for Mr. Chamberlain. Mr. C. Foster, architect:—

Davy	£760 10 0
Palmer	680 0 0
Wells	675 0 0
Johnson	650 0 0
Patman	584 0 0
Starkie	544 0 0
Boreham	530 0 0
Clark	525 0 0
Franklin	520 0 0
Mason	493 0 0
Newman	482 10 0

For building stables, &c., at the new Station Inn, Lewes. Mr. G. Tuppen, architect:—

Davey	£193 0 0
Norman	191 15 6
Simmonds	150 0 0
Harman (accepted)	142 15 0

For building a villa residence, on the Brighton Workhouse estate, for Mr. J. Lutley. Mr. G. Tuppen, architect:—

J. & W. Stenning (accepted)	£1,300 0 0

For building the "Duke of Sussex," High-street, Kensington. Mr. Josiah Houle, architect. Quantities supplied by Mr. D. Cubitt Nicholls:—

Jackson	£2,040 0 0
Langmead & Way	1,997 0 0
Ferguson	1,976 0 0
Macey	1,938 0 0
Ennor	1,875 0 0
Hockly	1,875 0 0
Cowland	1,860 0 0
Scrivener & White	1,793 0 0
Clemence	1,768 0 0

For the erection of chapel, Caledonian-road. Messrs. T. & W. Stone, architects. Mr. A. Manning supplied the quantities:—

Patrick	£2,188 0 0
Mansfield & Price	2,182 0 0
Manbridge	2,163 0 0
Chessum	2,100 0 0
Harris (too late)	1,756 0 0
Goodman	1,724 0 0

For two semi-detached villas in Park-road, St. John's-wood, for Mr. R. Green. Mr. T. Renton, architect:—

Ebbs & Son	£1,450 0 0
Longmire & Burge	1,448 0 0
Blyth	1,440 0 0
Higgs	977 0 0

For repairs, alterations, and additions to the buildings, &c., at the Battersea Burial Ground. Mr. C. M'Intry North, architect. Quantities supplied:—

Tanner	£499 15 0
Browne & Robinson	440 0 0
Newman & Mann	429 0 0
Easton, Bros.	429 0 0
Nightingale	410 0 0
Cox	395 4 6
Blackmore	390 0 0
Atkinson	384 7 0
Axford & Whillier (accepted)	383 0 0

TO CORRESPONDENTS.

H. (certainly not).—T. M. (no).—Mikros (in type).—S. L. W. (thanks. Not desired).—J. D. D.—T. W.—W. S.—Surveyor.—J. F. T.—W. B.—H. M. L.—H.—M. U.—J. E. C.—I. & A.—Mr. H.—C. F.—S. & M.—J. M.—H. B.—J. J. H.—T. F.—H. & N.—J. B.—F. F.—Mr. U.—H. L. D.—T. A. H.—J. G.—A Wayfarer.—T. & W. S.—T. F.—J. B.—J. T.—B. E. N.—E. L.—M. J. W.—H. K. & W.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of Tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

TO SUBSCRIBERS.

Advertisements cannot be received for the current week's issue later than **THREE o'clock, p.m.,** *on THURSDAY.*

BUENOS AYRES GOVERNMENT CERTIFICATE. — TRANSLATION. — "We, the undersigned, at the request of Messrs. J. C. Thompson & Co. certify that the IRON SAFES of Messrs. CHUBB & SON, London, of which these gentlemen are Agents, were exposed for several hours to the fire that took place in the offices of the National Government on the evening of the 26th instant; that in our presence they were easily opened with their respective keys; that the moneys and important documents they contained were found in perfect order; and that these Safes are now in use in the National Treasury Office.—Buenos Ayres, July 31st, 1867.

(Signed) J. M. DRAGO,
Treasurer of the National Government.
JOSE TOMAS ROJO.
JUAN M. ALVAREZ.

A true copy.—A. M. BELL."

A large assortment of these Safes may be inspected, and lists of prices obtained, at CHUBB & SON'S, 57, St. Paul's Churchyard, London; 68, Cross-street, Manchester; 28, Lord-street, Liverpool; and Horseley-fields, Wolverhampton.

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WIMBLEDON PARK.—The valuable Building Materials of a newly-erected Detached Residence.

MESSRS. GLASIER & SONS are instructed to SELL by AUCTION, on the PREMISES, Lake House, Albert-road, Princes-road, Wimbledon Park, on WEDNESDAY, next, OCTOBER 20, at ONE o'clock precisely, the whole will be first put up in one lot, and if not disposed of it will then be sold in lots, the valuable MATERIALS of the above-mentioned residence, which has only been erected about five years: comprising plate glass and other sashes and frames, 4-panel moulded and other doors, marble chimney-pieces and register stoves, handsome carved statuary drawing-room chimney-piece; capital 5 ft. kitchener, by Philips & Co.; 5 ft. cottage range, zinc bath and fittings, capital board and timber floors, rafters, slates, brickwork, stone paving and coping, lead, and the usual fixtures and fittings.—On view two days prior, and catalogues had at the Green Man, Putney Heath; on the Premises; and of the Auctioneers, 41, Charing Cross.

Public Offices Act, 1865.—Second Sale of Building Materials.

MESSRS. GLASIER & SONS have been favoured with instructions from the Commissioners of her Majesty's Works and Public Buildings, to SELL by AUCTION, on the PREMISES, on WEDNESDAY, OCTOBER 27, at TWELVE for ONE o'clock, in Lots, the BUILDING MATERIALS of FIVE HOUSES and SHOPS, Nos. 18 and 19, King-street, and 56, 57, and 58, Charles-street, Westminster: comprising about 300,000 capital stock bricks, tiles, timber in roofs, floors, &c.; doors, sashes and frames, plate glass and other shop fronts, register and other stoves, slate cisterns, stone paving, copper steam boiler, fixtures and fittings, and several tons of lead.—On view day prior and morning of Sale, and catalogues had of JAMES PENNETHORNE, Esq. 7, Whitehall-yard; at the Office of her Majesty's Works, &c. 13, Whitehall-place; on the Premises; and of the Auctioneers, 41, Charing Cross.

CHELSEA.—ASHBURNHAM ESTATE.—Building Materials, Gasometer, Fittings, &c. being the first portion of Implements, &c. used in working the Monster Balloon.

GEO. TODD is instructed to SELL, by AUCTION, upon the PREMISES, Ashburnham Estate, King's-road, Chelsea (adjoining Cremorne), on TUESDAY and WEDNESDAY, OCTOBER 19 and 20, 1869, the whole of the STOCK upon the ground: comprising timber, deals, about 20,000 1¼-inch and other boards; 30,000 feet of deals, 300,000 feet of die square and quartering, 100,000 bricks, about 3 tons of bolts and nuts, a large quantity of firewood, &c.—May be viewed on Monday preceding the sale, and catalogues obtained, at the World's-end, King's-road, Chelsea; and of GEO. TODD, Auctioneer, 8, Pancras-lane, Bucklersbury, E.C.

BECKENHAM, KENT.—Extensive Sale of first-class Builder's Stock, Plant, and Effects, by order of the Proprietor, who is retiring from business.

MESSRS. HARDS, VAUGHAN, & LEIFCHILD are instructed to SELL by AUCTION, on the PREMISES, Copers Cope-road, adjoining the New Beckenham Station, on THURSDAY and FRIDAY, OCTOBER 21st and 22nd, at TWELVE o'clock punctually each day, the whole of the valuable STOCK and EFFECTS, comprising about 300 squares of best flooring, 900 deals and planks, 100 cut pine boards, 1,500 yellow and white deals, oak and pine logs, scantling, 900 feet mahogany, tiling and slating battens, 50 well-made panel doors, skirting, moulding, prepared beads and mouldings, 100 sets sash cills, 60,000 various bricks, drain pipes, stone, 6,000 paving quarries, a large quantity of scaffold poles and boards, planks, pulleys, &c. joiners' benches, Bissell's improved mortising machine, 3 cwt white varnish, paper hangings, a well-bred mare and cart, chaff cutting machine, and numerous effects.—Catalogues of the Auctioneers, 62, Moorgate-street, City, and Greenwich, S.E.

NORBITON PARK, New Malden, Surrey.—Eligible Freehold Building Land.

MR. J. TAYLOR is instructed to SELL by AUCTION, at the NORBITON PARK HOTEL, New Malden, Surrey, on MONDAY, OCTOBER 25th, 1869, at SEVEN o'clock precisely, Thirty-five Lots of very eligible FREEHOLD BUILDING LAND, having valuable frontages to Penrith-road, Moreton-road, and Cambridge-road, New Malden, within five minutes' walk of the Coombe and Malden Railway Station. The estate is well adapted for the erection of semi-detached villas or terrace houses. Nine-tenths of the purchase-money may be paid in nine years by equal quarterly instalments, with interest at 5 per cent. on the balance due each quarter, or the remainder may be paid off at any time without notice.—Plans, &c. may be obtained on and after Wednesday, October 13th, at the Railway Tavern, New Malden; at the Place of Sale; and of the Auctioneer, 107A, Fenchurch-street, City.

TO LIME-BURNERS, WHITING and CEMENT MANUFACTURERS.—TO BE SOLD, in consequence of the death of the late owner, in NOVEMBER next, by PUBLIC AUCTION, unless previously disposed of, a FREEHOLD PROPERTY of 35 Acres, containing open pits of grey and white chalk, sand, and brick-earth. This property is situated at Amberley, Sussex, on the River Arun (having water communication with London and Portsmouth), and abuts on the Amberley Station of the London, Brighton, and South Coast Railway. The lime produced has been used for the Portsdown Fortifications.—Apply to Messrs. RICHARD & GEORGE HOLMES, Solicitors, Arundel.

EALING.—The Castle-hill-park Estate.—A very attractive and valuable Building Property, Freehold, within seven miles of Hyde-park-corner, containing 66 acres of ornamentally-timbered and park-like land, well laid out with new roads and sewers partly made, and ready for immediate building operations. This land adjoins the new station on the Great Western Railway for the metropolitan traffic, and to be called the Drayton Green Station.

MESSRS. DRIVER have received instructions to SELL by AUCTION, at the MART, Tokenhouse-yard, Lothbury, on TUESDAY, OCTOBER 19th, at TWO o'clock precisely, in one or more lots (unless previously disposed of by private contract), the above very valuable PROPERTY, situate within one mile of the Ealing Station, and close to the proposed Drayton Green Station on the Great Western Railway (main line), from Paddington, and viâ Kensington from Victoria. It comprises about 66 acres of ornamentally-timbered, park-like land, the most desirable portion of the Castle-hill-park Estate. It is elevated, commands extensive views, and has a southern aspect. There are valuable gravel and brick earth, capital roads, with sewers partly made, and gas and water laid on to two sides of the estate. A temporary church has been erected. This property is fit for immediate operations, and specially recommends itself to building societies and capitalists. Also a superior detached Residence, fronting the Cleveland-road, containing ten rooms, with ample domestic offices.—Particulars may be had of Messrs. TRAVERS, SMITH, & DE GEX, Solicitors, 27, Great Winchester-street; of Messrs. TUCKER, NEW, & LANGDALE, Solicitors, 4, King-street, Cheapside; and of Messrs. DRIVER, Surveyors, Land Agents, and Auctioneers, 4, Whitehall.

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Mechanical Philosophy, including Statics, Dynamics, Hydrostatics and Hydraulics, Pneumatics, and Heat regarded as a Source of Power	100
Experimental Science, including Inorganic Chemistry, Heat, Electricity, and Magnetism.	100
Geology and Mineralogy	40
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Strength and other Properties of Materials, and the Calculation of Strains.	100
A. Railway and Canal Engineering	140
B. Marine Engineering, including Harbour, Dock, Sea, and Reclamation Works.	140
C. Hydraulic Engineering, including Water Supply, Sewage, and Irrigation.	140
D. County Works, including Architecture, Roads, Drainage, and River Works.	140
	1,000

*** Each of the groups lettered A, B, C, D, to include Designs, Estimates, Specifications, and the Mechanical contrivances connected with it; and Candidates will be required to show that they have been engaged in the practice of their profession on adequate works for a sufficient time, or have had in some other way satisfactory opportunities of becoming acquainted with the practice of their profession in some one of the branches thus indicated.
Persons wishing to compete should forward, not later than OCTOBER 26, evidence of their age (which must be between 26 and 40), and of their professional training, to "The Secretary, Civil Service Commission, Cannon-row, London, S.W."
Such further inquiries as may be necessary will be made by the Civil Service Commissioners, with regard to the age of Candidates, and also as to their health and character.
Dublin Castle, 2nd October, 1869.

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G. P. ARDEN, Clerk to the Board.
Halstead, Essex, 13th October, 1869.

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